NAVY CIVIL ENGINEER

1900

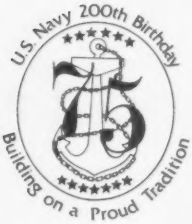
1775 1975

Navy Bicentennial

ON THE COVER

Artist Barbara Gray salutes the 200th Anniversary of the Navy, an advent to the Nation's Bicentennial by selecting highlight years and events of the Navy and its Civil Engineer Corps. 1898 saw the first CEC officer to head the Bureau of Yards and Docks (now the Naval Facilities Engineering Command) and the brilliant victory of Dewey in the Philippine Islands during the Spanish American War. The corps, founded in 1867, saw one of its members, Rear Admiral Robert E. Peary, win international acclaim for discovery of the North Pole while President Theodore Roosevelt introduced the world to American sea power with the Great White Fleet in 1909. And, of course in 1941, the outbreak of WW2 resulted in the United States' world leadership and for the Civil Engineer Corps the command prerogatives and the founding of the now-illustrious Navy Seabees in 1942.

On page 4, Professor T. C. Murphy discusses philosophical and attitudinal changes occurring within the Navy.



NAVY CIVIL ENGINEER
VOL. XVI, NO. 3
(NAVFAC P-330)

Published By
NAVAL FACILITIES ENGINEERING COMMAND
Alexandria, Va 22332

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Issuance of this periodical approved in accordance with Department of the Navy Publications and Printing Regulations, NAVEXOS P-35. It does not alter, amend or supersede official regulations, orders or directives. Cost of printing is charged to appropriate funds for maintenance and operations of the Naval Facilities Engineering Command.

Published quarterly, The Navy Civil Engineer is intended for the information of Regular and Reserve pesonnel of the Civil Engineer Corps, United States Navy, and key civilian employees of the Naval Facilities Engineering Command, subordinate commands and other mission-oriented activities.

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This periodical is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20401. Price 75c per copy. Subscription $3.00 annually for domestic subscribers; $3.75 annually for foreign subscribers. Send remittance to the Superintendent of Documents. Entered as a controlled circulation publication at Paramount, Calif.

Published at the Naval School, Civil Engineer Corps Officers (CECOS), Port Hueneme, Calif., 93043.

Manuscripts for editorial consideration and inquiries should be directed to: The Editor, The Navy Civil Engineer Magazine, Code C20M, Naval School, Civil Engineer Corps Officers, Port Hueneme, Calif., 93043. Telephone: (805) 982-3104, Government Autovon 360-3104.

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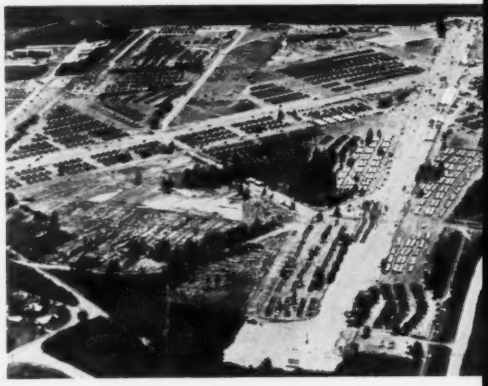
BEWARE-lest the dreaded "Amp-Eater" gobble energy-and money. See story beginning on page 8.



OROTE POINT-Seabees convert a jungle-overgrown runway into a home for refugees. See story beginning on page 14.

200 YEARS

. . . where we've been and where we're going . . .

By T. C. MURPHY
Professor, Engineering Management, CECOS

It's beginning to look as if the all-volunteer force (AVF) might be succeeding after all. There were many who predicted its immediate failure, and that return to drafting would be necessary. Some even worked to cause it to fail, and today there are some who are convinced that it is a bad thing, and is doomed to fail eventually.

There seems to be some unspoken conviction that a drafted individual (or a draft-driven volunteer) would, in some mysterious way, be better and easier to control. Why this was ever believed defies understanding.

In terms of an efficient military force (EMF) (the ultimate and total objective), the manner of input is entirely inconsequential. Retention is the crucial factor, and first term reenlistment is a product of the individual's experience during his first term.

Individuals who become career-committed make two decisions: First, to join and second, to stay. His first term experience dictates the second decision. It is that commitment —a decision based upon satisfactions and the promise offered by a Navy career—that leads to reenlistment. Words got him in; only the deeds which compose his experience lead him to stay. A transient Navy cannot result in an efficient military force. And, of course, some will waste that first term, and decide too late that staying *is* attractive, and become rejects.

A second advantage of the AVF is that voluntary joiners arrive in what Milgram *(Obedience to Authority, Harper and Row, 1974)* calls an agentic state. To oversimplify this translates into at least an initial willingness to submit readily to authority figures generic to an environment. As many know, this is not often true of the draftee who, in effect, came in against his will. This agentic condition looms as a very large factor in creating an EMF.

But some claim that the only reason the AVF is currently succeeding is the poor job market and high unemployment. But this is too-easy an explanation and like so many conclusions we jump to, it may very well be wrong. Further, it is speculative. Even in good times, what kind of a job did a recent high school graduate (or a drop-out) get? How attractive was it? And what future did it lead to?

Comparatively, no jobs available to an 18 year old, even in good times, holds the growth and career opportunity prospects which become visible during a first term Navy enlistment in most commands.

The sine qua non of an EMF is a Navy composed of sufficient numbers of career-committed individuals; and the algebra of commitment is a function of the individual's observations, gained through personal experience, of officers and petty officers.

That experience varies with different commands, of course, but those command environments which are perceived as humanizing tend to induce career commitments in far greater numbers than those perceived as dehumanizing. No one knows this better than junior officers some of whom feel like caponized agents of a bureaucratic monster which insists that all its agents adopt a programmed existence.

Too often, as exit interviews indicate, the experience during the first term leaves the individual's memory bank full of nothing but psychological scar tissue.

Fortunately, the *Z-Grams*, all arguments regarding their desirability and the manner of their dissemination aside, opened the door and indicated, to the recruit particularly, that there was indeed a new Navy and that its principal difference from the old Navy was in a humanizing direction. And in many commands this has proven to be true.

To some senior officers and petty officers, however, humanization is deplored, primarily because the idea behind it is presumed to consist of keeping people happy at the expense of military efficiency, discipline, and performance of the command. And from that belief it is only a short step to making it come true by abdication or abandonment of standards, poor leadership, and imprudent enforcement. And, ipso facto, the prophecy materializes.

Navy history, past and current, is filled with examples of superb performance by humanized commands, many which predated Z-Grams.

The most essential ingredient of an EMF is discipline; but too many officers and senior petty officers equate discipline with obedience. In a purely military evolution this is often true and sufficient; but in many crises in Naval history it took *more*. It took initiative, independent action, invention, and in some cases disobedience, for military success. Our military history can do without any more incidents of the LT Calley brand of "obedience."

Some officers and senior petty officers find it impossible to give more of themselves to the human dimensions of leadership. They are hung up on "instant obedience," and questions from subordinates infuriate them. Their vocabulary is sometimes confined to "because I said so, that's why."

Of course, this seldom works even in the home where Dad can, if he is so inclined, pull out his belt and lay it on juvenile bottoms at will. This leads the adolescent to invent all sorts of evasion-escape-deceit strategies which he is able to test at school; further, he shares the experiences of his peers. The objective: prevent detection and repetition of belt episodes. And it is often successful—in that respect; but what behavior changes has he learned? Very simply, that it's better not to be caught and to be belted. As most officers know, *thoughtful* obedience; *initiative,* discipline is what is needed in today's Navy.

There are, naturally, retention problems among young officers; and this may work to the Navy's great disadvantage in the long run. *Which* young officers are leaving? Probably those unfortunate enough to serve in one or more commands which manifest the Navy's worst side. For an energetic, sharp, enthusiastic professional whose motives are positive and constructive, a "programmed existence" soon becomes unattractive. Further, young officers' wives are very different from earlier distaff; they are not passive, often quite open, and set definite limits, suitable to their own aspirations, upon their willingness to conform in matters of dress, recreation, social activity, and other activities. While many are not active participants in the "women's liberation movement," they reject the ideas of male supremacy, and are not afraid, on occasion, to call attention to its lack of foundation, regardless of the occasion.

"it's more important what's in a man's head than what's on it..."

In discussions with a number of very promising young career officers we learn that they are often confused about command goals. Some work very hard to achieve and to demonstrate high performance in their units, only to learn that their own performance is discredited because of the haircuts and beards of their subordinates. They wonder why the unit military performance is overlooked in favor of appearance. Some commands seem to have almost a fanatic obsession with haircuts. This has devolved into a contest of wills—symbolic on both sides—with others in the chain of command caught in the middle.

It seems in some circles that military efficiency has been determined to be a function of appearance. Subject as they are to the pressures of the fitness report, some young officers have defensively had to begin consuming their energies in pursuit of appearances first and performance second. Some are entirely unsympathetic to this command preoccupation and sense of priority. Today's young officer is ill-fitted for this adversary role, especially when he knows that he must bear the costs personally whether assessed from above or below or both. Fortunately, many commands have found ways—effective ways—of establishing conditions of organizational health which, by definition, practically eliminate the problem. Appearance *is* important. But it is important for its own sake and on its own merits. To pretend that it is equatable with military efficiency is not a sound proposition.

Nondescript units have often out-performed smart-looking troops. Perhaps we need to recognize that what's in a man's head can, on occasion, be much more important than what's on it!

"flogging cannot be done away with... without injury to discipline . . ."

Some naval persons seem to believe that, somehow, change is against the laws of nature.

"For centuries, flogging was routine punishment for just about any offense in the British and American navies, and its degree of use rested solely upon the disposition of the ship's captain. One might think that the Navy soon would have outgrown the practice, but its abolition was fought every step of the way since it was *feared that discipline would be impossible without it.* The outlawing of flogging was considered by Congress in 1820, but the resolution was defeated because of the *discipline question.* Again, in 1845, it was defeated after Secretary of the Navy John Mason responded to Naval pressures and testified to Congress that it 'Cannot be done away with . . . *without injury to the discipline* of the service and endangering the safety of our ships.'" (Italics added; from *World's Apart* by Ensign D. N. Edelstein, Naval Institute Proceedings, Feb. 73.)

In 1850 the Congress stopped yielding to navy claims and outlawed the practice. To almost no one's surprise, senior naval officers being the exception, discipline did not become a serious problem, let alone produce the predicted seaborne shambles. In a study prepared for the Navy by Systems Development Corporation recently it was stated: Almost ten years ago, one Navy Captain wrote about problems associated with the retention of naval personnel in the following way. "Human organizations are made up of persons, persons not in the abstract, but persons existing in a particular time reference in a particular historical environment with unique requirements and expectations affected by international, national and cultural movements which make each generation uniquely different from every other . . . change is a fact of life. Every

(Continued on Page 37)

TREE FARM — Teak and mahogany seedlings are nurtured at the Public Works Center nursery before being transplanted to reforestation areas around the Subic complex.

Navy Forests In The Philippines

BY R. E. ECLEVIA
PHOTOS: LEO B. FONTILLAS

• Subic Bay R.P.

The rousing outcry all over the world for forest conservation arises from a quiet realization that man is destroying his surroundings at a rate sure to spell disaster.

On the U.S. Naval Base, Subic Bay, the Public Works Center adopted, long before "ecology" became a household word, a program to conserve and replenish its forest resources. Attention is concentrated on the northern sector from Kalayaan Gate east to Mount Santa Rita and south to the headwaters of Jadjad and Binictican rivers.

These rivers are the main water source for the entire community, and the timber stands that keep them flowing require special care and attention.

Captain Joseph A. D'Emidio, Commanding Officer, PWC, has often shown official and personal concern over the need to conserve and protect forest lands on base. The captain, who holds a masters degree in sanitation engineering and a bachelor's in civil engineering, is a confirmed environmentalist.

Just before assuming his present post, he was credited with establishing and heading the U.S. Navy Environmental Protection Division, Office of the Chief of Naval Operations, for which he recently received the Legion of Merit.

Those implementing various program projects are LCDR David E. Wheeler, PWC Operations Officer; Arthur M. Spinney, Head of Maintenance Department; Edward J. Saxe, Superintendent of General Services Division; and Francisco C. Rendorio, Forester.

In June 1972 a contract to reforest denuded areas was awarded to a local landscaping company. The contract calls for planting ipil-ipil, a fire resistant tree native to the Philippines; teak, a hardwood from Thailand; and large leaf mahogany from Honduras. With the command providing expertise, contract workers so far have planted more than 100 acres of ipil-ipil, 75 acres of teak, and 30 acres of mahogany.

This fiscal year, 360 acres are scheduled to be planted in teak and the pulpwood gmelina arborea. The first quarter of next fiscal year, 180 more acres will be planted to ipil-ipil.

To meet the project needs, PWC maintains a nursery where seedlings are nurtured at least one year. The nursery boasts more than 150,000 seedlings at any given time, growing in plots or individual plastic bags.

The contractor also has his own nursery, where seedlings intended to replace the ones supplied by the com-

mand are grown in case they burn or die within five years after planting, as stipulated in the contract.

CUTTING & GIRDLING

To complement reforestation, PWC practices selective cutting of valuable trees and girdling of less desirable species in the existing forest zones. By selective cutting, only trees of commercial size are harvested, and moreover, workers who do the actual cutting are cautioned to see to it that the tree falls where it does least damage.

On the other hand, girdling, a process whereby a ring is cut around the trunk to stop the flow of nutrients from the root system, becomes necessary when a tree uses up too much water along river banks or when it crowds out and stunts the growth of other, more important, species elsewhere in the forest.

THE PROBLEM

The reservation covers 26,080 acres. This includes 22,080 acres of commercial forest and 4,000 acres of critically denuded areas. In order to understand better how the present problem came about, it will help to remember the peculiar situation of the base vis-a-vis the neighboring civilian community.

The base and Olongapo City are part of a region once covered by a thick, sprawling forest. Unfortunately, while the base succeeded in conserving timberlands, the city sacrificed its forests to meet demands for more space for its runaway population growth.

With mountains in the city stripped, the base forest offers a tempting prize for people dependent on forests for their livelihood. The vast rolling hills, which until recently had never been really defined or enclosed, are very vulnerable to "kaingineros" (itinerant farmers), who clear and burn a patch in the jungle for one-time planting of short-term crops; and woodcutters, who look upon the base as an inexhaustable source of firewood and timber.

TIMBER AND WATER — Command conservation efforts at Subic Bay years ago resulted in forests such as that pictured at far left. Largely as a result of these successful forest projects, Naval Base Subic Bay is assured of adequate stream flow — and water supplies — during the Philippine summer.

LOGGING — Selective cutting of commercial trees keeps timber stands healthy.

There are other factors in the depletion of forest reserves at the present rate, but none can compare with the ravages wrought by these people.

EARLY EFFORTS

As early as 1946 and up to the time the present program started, hundreds of acres had been planted to both native and foreign trees. Teak and Honduras mahogany were planted around the Naval Magazine and the pulpwoods albizia falcata, gmelina arborea, and kaatoan bangkal around the watershed area on the northern perimeter of the base.

In the relatively secure surroundings at NavMag, the trees flourish to this day. This is not so with the greater part of the watershed, where seedlings were mostly burned when fires, fed by the dry cogon grass in summer, spread from the "kaingin" farms to other parts of the forest.

Responsible officials feel the present program must succeed, and, if one contemplates what failure would mean, price doesn't matter. In 1957 a prestigious engineering firm, after making a study of the base water system, reported geological formation of the area is not favorable for development of sufficient ground water.

This means if the creeks and streams that feed the rivers begin to dry because of deforestation, the base will have to turn elsewhere for water. A good question is where or by what process the base might get that water.

BOUNDARY ROAD

NMCB-133 recently built a boundary road to mark base landholdings in the remoter parts of the forest. The road protects against fires from outside the boundary. It also makes it easier for the police to patrol the area and apprehend intruders.

Until construction of the road, intruders took advantage of the lack of a clear-cut definition of the area within base jurisdiction. On the other hand, PWC authorities, considering that many of these people live near the base forest and know the terrain well, employed many for the reforestation project. This helped all concerned. For these people it meant steady income; for the base it meant greatly diminished logging and "kaingin" farming.

MERITORIOUS ACHIEVEMENT

The Secretary of Defense, aware of the program, recently awarded PWC a Citation for Meritorious Achievement. Notwithstanding many obstacles, the command succeeded in conserving existing timberlands and reforesting scarred and blighted areas.

In a position paper explaining the objectives of the present program, PWC authorities stated a well managed forest offers many recreational opportunities for the base community. It also preserves for future generations, a vast tract of land rich in timber, valuable plants and wildlife.

Its more immediate use, however, is to ensure water throughout long summer months and to decrease the likelihood of floods when the rains come.

GROWTH — Teak seedlings begin to "recapture" an area.

Beware The Amp–Eater

DENNIS M. HANNEMANN, P.E.
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Nationally, 20 percent of the electricity generated is used for lighting. Translating this into Navy terms, lighting costs almost $40 million a year. This cost is expected to rise to $50 million next year.

Since lighting represents a big portion of Navy electricity use, seemingly small, navy-wide improvements in lighting can have a large dollar impact.

This article is intended to aid decisions about lighting and assess their effect on energy conservation.

TECHNICAL LITERATURE

Technical and trade magazines often feature articles on energy saving through improved lighting, improved operation and maintenance techniques, etc. Most of these articles are informative.

However, a few have contained errors. These unintentional errors have caused some confusion. A thorough evaluation should compare several alternatives including the status quo.

SALES TECHNIQUES

Many new lighting products claim energy savings. Sales literature for these products extoll their benefits. To sell his product, a vendor emphasizes its good features and avoids any bad features. He many also make selective comparisons which show his product to its best advantage.

Caveat Emptor! The following example shows the need for thoroughly evaluating new lighting products before buying them. Self ballasted screw-in fluorescent lamps are advertised as direct replacements for incandescent lamps.

Sales literature shows energy and maintenance savings amortize the unit's cost in several years. The Civil Engineering Laboratory evaluated units and reported incandescent lamp sockets were not designed to carry the weight of these units.

Starters and lamp holders failed often during the tests. Because of product weakness and high initial cost, only limited use was recommended.

A comparison of a U.S. manufactured 42 watt circleline lamp with a 40 watt straight fluorescent lamp showed the circleline has 40 percent the life, costs 325 percent as much and is 75 percent as efficient as the straight fluorescent lamp. A completely new lighting system could be a better choice!

LIGHT SOURCE EFFICIENCY

Fluorescent lamps are the most adaptable high efficiency lamps. High pressure sodium lamps have the highest efficiency of lamps useable over a wide range of applications. Because of the tremendous energy savings achieved with this lamp, fixtures are being developed to allow use of high pressure sodium lamps for most lighting applications.

The single drawback to this lamp is its gold colored light. It should not be used where exact color rendition is needed. In indoor lighting applications, objections to the golden color disappear in a few days and personnel often indicate a preference for the new light.

Low pressure sodium lamps have recently been re-introduced. They were originally developed in the 1920's. Improvements have now made this lamp very efficient. Currently, these lamps provide 180 lumens per watt; significantly better than any other source and ten times better than incandescent lamps.

Amp-Eater (cont.)

It is, however, a monochromatic source emitting only yellow light. Applications are generally limited to outdoor and security lighting.

New energy saving incandescent and fluorescent lamps now marketed use about 10 percent less energy than the lamps they replace; a 54 watt incandescent lamp replaces a 60 watt lamp and a 35 watt fluorescent "watt saver" replaces a 40 watt lamp. These lamps produce less light because of their lower wattage and may not provide adequate illumination.

Secondly, these lamps currently cost more than the lamps they replace. A decision to use watt-saver lamps should be based on economics. Will energy saved offset increased lamp cost?

Other factors affecting the decision are changes in lamp efficiency and rated lamp life. A change in lamp life not only changes lamp cost but has a significant effect on maintenance costs.

TO DISCONNECT OR NOT

Removal of fluorescent tubes while keeping ballast energized has created much confusion. Provided all tubes supplied by the ballast are removed, there is no effect on ballast life or safety. Energized ballast continues to draw a small amount of "magnetizing" energy.

In most office applications, magnetizing energy is about 18 KWH a year for a two-40 lamp rapid-start ballast. At current rates this costs about 50 cents a year.

An economic evaluation should determine if the cost of energy saved can amortize the cost of labor to disconnect the ballast. Other factors which should be considered are the age of the existing lighting system and the timing of future redesign of the lighting system. Also, the possibility of reconnecting ballasts in the future should be considered.

MAINTENANCE

With decreed lower lighting levels, maintenance becomes very important. Dirt starts accumulating on a fixture as soon as it is installed. As dirt builds up, light output decreases.

This is called Luminaire Dirt Depreciation (LDD) and can reduce light output 20 percent in two years. As the environment becomes dirtier, the LDD factor increases. The cure for LDD is periodic washing of lighting fixtures.

For offices, washing is recommended every two years. Dirtier locations may need more frequent wash intervals.

As lamps age they produce less light. This is called Lamp Lumen Depreciation (LLD). LLD is the ratio of light output when the lamp has reached 70% of its rated life to light output when the lamp is new.

LLD for incandescent lamps is 89 percent and fluorescent lamps is 82 percent. LLD for high pressure sodium lamps is 90 percent, and 100 percent for low pressure sodium lamps. LLD has no effect on the amount of energy used by the lamp. Therefore, as a lamp nears the end of its life it produces less light than when new.

GROUP RELAMPING

Group relamping is replacement of all lamps at intervals. Several economies may be achieved. First, labor costs are lower than with replacement of single lamps as they burn out. Secondly, group relamping is scheduled near the end of anticipated lamp life.

LLD is improved because the lamps are all replaced when their output is dropping off rapidly. The policy of replacing lamps as they burn out can or will create a situation where the LLD of the lamps is high.

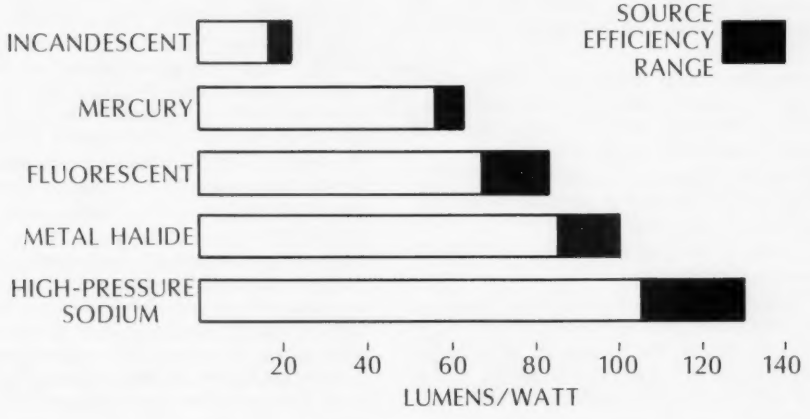
LLD and LDD reduce lighting levels far below those that should be achieved. In some instances naval activities have removed old lamps, washed fixtures and re-lamped half of the fixtures giving a net increase in light levels.

Today, after removing many lamps from their fixtures, proper maintenance has taken on new importance. We cannot tolerate inefficiencies in our lighting systems due to LLD and LDD.

There are many gimmicks and merchandising tricks waiting for you. Beware of these tactics and make decisions based on economic evaluations. Energy can be saved and overall lighting quality improved if proper attention is given to lighting maintenance and, where justified, existing lighting systems are replaced with new high efficiency lighting systems.

FIGURE 1

LIGHT SOURCE EFFICIENCIES



TIDEWATER PLANS

Organizing the Virginia coastal Navy complex

BY N. D. FALK
Lieutenant Commander, CEC, USN
Head, Facilities Planning and
Real Estate Department, LANTDIV
• Norfolk, Va.

A new approach to regional planning is being initiated in the Virginia Tidewater area, the largest concentration of Navy presence in the United States. The program has been assigned to the Atlantic Division, Naval Facilities Engineering Command, as a pilot effort and reflects determination to establish a more comprehensive system for guiding decisions for Navy facilities development.

The Tidewater regional planning process differs from previous regional planning efforts in being *"process"* rather than *"project"* oriented, and by deliberately attempting to influence decision-making bodies *"external"* to the Navy as well as guiding *"internal"* development decisions.

The military services along with other federal agencies are increasingly driven by what is best characterized as a push-pull environment.

We are being pushed externally through legislative edicts and administrative mandates which reflect the continuing emphasis on ecology, and a growing sensitivity to the impact of federal programs on state and local jurisdictions.

Simultaneously, we are being pulled internally toward wider planning horizons in order to satisfy our professional responsibilities as stewards of the public trust.

Or to put it more bluntly, we must do a better job because our financial resources are diminishing.

Fortunately, the facilities planning systems and programs which have been established to guide the development of individual installations also provide the framework of essential data to permit effective response to these new pressures. And it is precisely because the Navy's micro-planning problems are being effectively addressed that new macro-planning process initiatives are possible.

Every planning process is undertaken for the purpose of guiding decisions for future action. When the scope of potential decisions is technically oriented or of limited horizon, the supporting planning process can similarly concentrate on defining and analyzing the technical aspects of the problem.

Our Master Planning and Shore Installations Facilities Planning and Programming Systems are designed to support this decision process, and have proven highly effective in guiding the military construction program and rationalizing land use decisions at the installation level. As the decision process focuses on higher level or more comprehensive issues, however, it must often cope with very complex problems characterized by a high degree of uncertainty.

Because of their complexities and uncertainties, development decisions with regional implications are usually based upon informed judgment or political concensus rather than technical criteria. It thus follows that the ability to influence decisions will depend largely on the capability to influence professional judgments through continuous communication among decision-makers. The decision-makers referred to range from staff to policy-making and command-level officials within and outside the Navy.

Deliberate interaction with local and regional policy and planning bodies is a necessary consequence of the new review requirements now being mandated. The Coastal Zone Management Act *(CZMA)*, National Environmental Policy Act *(NEPA)*, and Office of Management and Budget Circular A-95 *(OMB A-95)* are illustrative of some of the laws and directives which require consultation and review of Federal development programs by local, state, or regional agencies.

Constructive dialogue based on close staff-level working relationships can result in the circumvention of issues or positions which cannot easily be handled if not realistically addressed before they reach the point of public announcement by high-level officials.

This approach represents neither a lobbying effort nor abandonment of federal prerogatives. It is rather an attempt to carry out federal law and regulation by carefully staffing issues on a timely basis at the working level. When occasional issues arise which represent fundamental divergences of interest, and disputes must be settled at the executive level, the process should have at least clearly defined the disputed points.

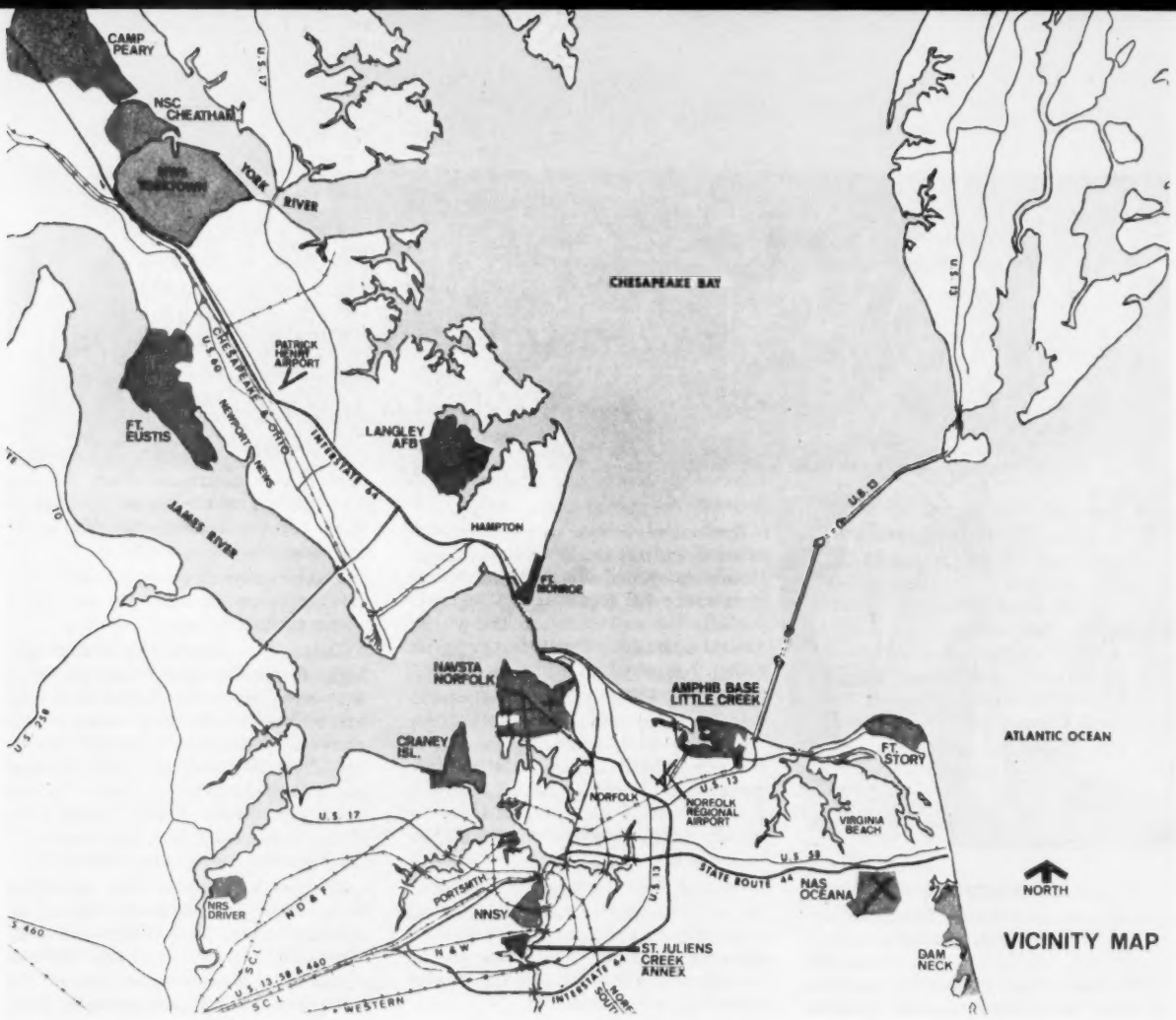
As previously mentioned, various NAVFAC sponsored efforts to deal with regional issues have been undertaken in the last few years. Project WIRE, a study of air space encroachment in Southern California; Project FRESH, a comprehensive study of military development on Oahu; Project STEM, the study of facility requirements in the Mediterranean; and the recently completed San Diego Regional Development Plan are representative of the regional plans and studies recently undertaken.

Each of these projects has been correctly praised for its contribution to the understanding of a regional problem. They were, however, each conceived as a project with a definite end point after which the planning team disbanded and returned to other duties. In contrast, the regional planning process which is being structured for the Virginia Tidewater will be continuous. Regional plans and studies will be accomplished as appropriate, but they will be designed to guide the ongoing process much as master plans guide development and siting decisions at the installation level.

The Tidewater regional planning process is being undertaken within the region for which the Commandant, Fifth Naval District *(COMFIVE)* acts as area coordinator, an area defined by a fifty-mile circle centered at the Sewells Point Complex in Norfolk. The Tidewater region includes seven major installation complexes situated within nine large incorporated cities and two counties in Virginia.

These political jurisdictions are served by two regional planning district commissions, two transportation districts, and a sanitation district to name only the most prominent state-chartered agencies which have an interest in Navy development decisions. Major Army and Air Force installations are also located within this region.

Although a major component of the planning process is concerned with the establishment of a continuous working level professional interface to influence decisions, various plans and



studies must be documented to support that effort. There is no intent to produce a single comprehensive regional plan.

Instead a series of interrelated plans and studies are being developed. A general overview document which will serve to define and highlight regional issues, and provide policy guidance for future efforts is currently in preparation. It is targeted for completion by the end of 1975. The principal purposes of this document are to serve as an organizing framework which will aid commanding officers and their staffs in relating their activities within the regional context, and to guide resource allocation priorities for follow-on plans.

It will also serve as a primary source for defining the Navy in Tidewater to external agencies. Such a document can of course have full effect only if it represents the position of the Area Coordinator. To that end, this document and all regional planning efforts are being conducted within the context of District Civil Engineer support of COMFIVE.

Within the context of the "umbrella" plan just described, various functional studies will also be undertaken. Community support facilities are a prime target because they are totally related to geographic distribution of population and facilities. Plans for regional redistribution of ordnance storage to reduce the amount of land encumbered by explosive safety quantity distance arcs have recently been ordered by the Chief of Naval Operations, (CNO).

Medical facilities are regionalized, as is petroleum storage to name only a few of the other functions which will be addressed in this regional sense.

At least two by-products are expected of the regional planning process. First, the activity master plan format can be simplified through reference to a regional planning document for general orientation information. As various functional plans are completed they will also provide justification for land uses and facility requirements which are not directly related to an activity's base loading.

As a second dividend, the preparation of environmental impact statements within the Tidewater region will be expedited and made less expensive through the ready availability of "boiler plate" information on regional considerations which is repetitive for all environmental impact studies (EIS) in this area.

Regional planning as it is conceived for the Tidewater area encompasses the concerns which other regional planning efforts have addressed, but fundamentally it is seen more as a way to do planning than as a particular product. The issues are so wide ranging and the participants concerned with implementation are so diverse that the success of the process will depend largely on the ability of the planners involved to solicit positive support among decision-makers.

The most significant contributions of the process may well result from the ability to influence outside agencies in maintaining an environment conducive to essential orderly Navy development. Numerous recent experiences with public reaction and federal court cases have demonstrated that the Navy can no longer conduct its affairs in isolation from the surrounding community.

The real challenge is now to turn this involvement with outside groups and agencies into a positive tool for promoting development of essential military facilities rather than a hindrance to necessary development.

The Jurisdiction Jungle

An amazing maze of boundaries may confront Navy justice

BY R. O'DONOGHUE
Director, Real Estate Utilization Division, NAVFACENGCOM HQ
• Alexandria, Va.

Whodunit isn't necessarily the first or even the most important question regarding a crime on a naval installation. The question "where?" may be equally important as "who?" The answer to this question, which may prove equally elusive, might well determine which laws apply to the crime and in which court the perpetrator will be tried.

In the early days of this country, when the federal government was relatively less powerful than the states, it was considered desirable and usually necessary for the United States to obtain a cession of jurisdiction from the state over a military installation. This is provided for in the Constitution.

Most of the states passed general cession statutes that gave the federal government exclusive jurisdiction over areas acquired for, among other purposes, naval activities. Under these early statutes (generally through the 19th century) state laws did not apply to these federal enclaves, nor did the state courts have any authority in these areas.

Later statutes ceding jurisdiction reserved more rights in the state, including concurrent jurisdiction where both governments had equal authority. As the states became less willing to cede all of their jurisdiction over federal installations, the federal government found increasingly less reason to acquire such jurisdiction.

By the mid-fifties a presidential commission studying the broad field of jurisdiction concluded there was rarely any justification for acquiring any degree of jurisdiction and that, on the whole, federal jurisdiction should be retroceded rather than acquired. This has been the trend in recent years.

It has been only a relatively minor trend, however, for jurisdiction has been, and still is, more difficult to relinquish than to acquire! Until recently it required an act of Congress to retrocede jurisdiction plus a state law to accept it.

We now have a federal statute vesting the service secretaries with general authority to relinquish jurisdiction. However, not many states have passed complementary general statutes for accepting such retrocession.

The result of all of this is that many Navy installations, particularly the older ones and those acquired in increments, are complete hodge-podges of jurisdiction. They contain some areas of exclusive jurisdiction, some with none at all, and, perhaps, other areas with some degree in between the extremes.

And, of course, over the years as these installations have been developed and redeveloped, the lines between different areas of jurisdiction have become obliterated. In many instances it would require a survey to reestablish precisely these old lines.

This is matter of relatively small moment most of the time, but, if a crime is committed, the type of jurisdiction may be of paramount importance. When a crime has been committed in an area under exclusive federal jurisdiction, state or local officials have no authority even to investigate the crime and the state courts have no jurisdiction to try one who is accused of the crime. It is a matter exclusively for federal officials and courts.

Naturally the biggest problems arise when a serious crime is committed close to a line between an area of exclusive jurisdiction and an area of state jurisdiction. It can be, and has been, not only necessary to determine where the line between the two types of jurisdiction runs, but also exactly where the crime was committed.

Theoretically, at least, the investigation can't even get under way until these points are determined.

The type of situation described may be more dramatic than other problems that arise out of the jurisdiction situation, but others can cause more problems to the Navy and navy personnel. There have been not a few instances where navy housing has been built in areas of exclusive federal jurisdiction. Here streets look like, and are used like any other streets in the vicinity.

However, local authorities can neither make nor enforce any traffic regulations on these streets. Drag racers take note! Obviously all more-serious offenses normally of local concern are in the same category, but there are some other problems as well.

Our normally law-abiding housing residents not only won't end up in the state's criminal courts, but they also won't have the civil courts available to them. If a will needs to be probated or one wants to sue his ever-loving spouse for divorce, he will have to use the federal courts. These are not exactly geared for this type business, nor are they usually as conveniently located.

In this day and age, when state and local governments have become increasingly involved in the many facets of everyday life on military reservations, the character of their jurisdiction on military lands have become increasingly significant.

This is true not only as to the situations mentioned, but perhaps to others not yet discovered. The blessings of federal jurisdiction over military property, particularly exclusive jurisdiction, appear to be mixed, at best.

In fact, we would be well advised to reduce most federal jurisdiction still retained to the maximum degree consistent with operational requirements of the military activity concerned, even to the point of recession of all federal jurisdiction in most instances.

EDUCATION

In the current All Volunteer Force environment there is a growing awareness of the importance of education and training of Navy personnel.

Several studies made to identify the principal factors which motivate young men and women to enlist and remain in the Navy support the idea that opportunity to "get an education" while pursuing a military career is one of the most important enlistment incentives, if not *the* most important incentive.

It is also true the better-educated person is less likely to be a disciplinary problem, and educational opportunity which retains personnel, who would otherwise not remain in the Navy, is productive because it retains a skill already developed, lowers training costs and it increases combat effectiveness.

The technology expansion the Navy is now experiencing creates a requirement to increase and rebuild technical knowledge and skills. With the increasingly sophisticated systems in today's Navy, individual and team instruction must be provided to insure the availability of an increasing number of highly trained technicians to operate and maintain these systems.

The continual development of new ships, aircraft, systems and weapons, driven by expanding operational requirements, requires that we introduce new training, and do so early, even though we must continue to train on old systems.

The energy crisis and other causes are reducing fleet and individual ship time at sea. At the same time, the modern high speed multi-threat environment faced by the fleet requires a high level of operational readiness. To achieve and maintain this readiness while reducing time at sea, personnel must be trained by simulation systems capable of duplicating combat situations.

Historically and traditionally, formal instruction has taken place with groups of learners who began instruction together, experienced it in a "lock-step" fashion, and completed it together. It has been found that significant improvements in learning are possible through application of self-paced individualized instruction.

"Individualization of instruction" involves removal of time constraints from instruction, and the provision of options to the student in the modes and media of instruction he is to receive.

Removing time constraints means freedom to register at any time of any day, enter the curriculum at a point commensurate with present knowledge and skills, proceed at a rate limited only by individual capability to learn, and end instruction whenever instructional objectives have been achieved.

Provision of options in modes and media means attending to the learning characteristics and capabilities of each student.

Facilities in which these modern training concepts are to be used must be provided by the Military Construction Program. As with most programs, resources allocated for military construction are severely limited and competition for approval of proposed projects is quite lively.

When a training project competes with an operational project — in most cases — the operational project will prevail. To alleviate this situation, an equitable procedure based on a balanced rate of correction by investment category has been devised for allocation of military construction funds.

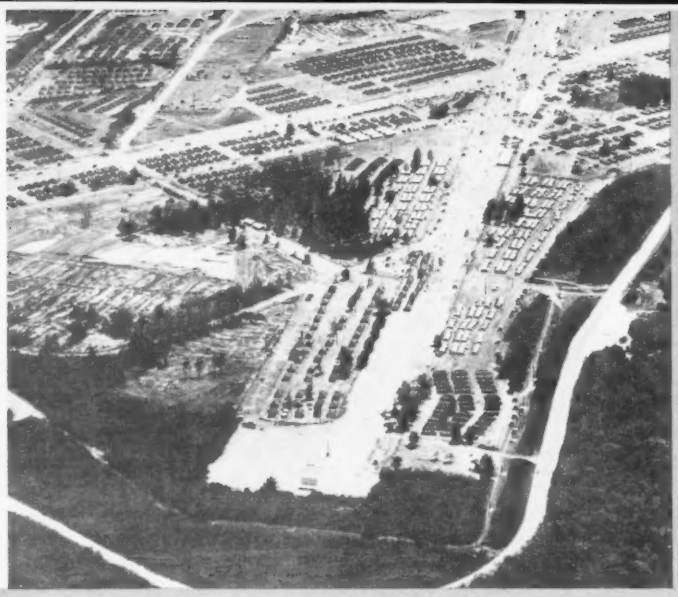
Thus the investment category for training is allocated its fair share of available resources. But even so, within the training investment category there are far more needed projects than funds to finance them.

For each annual Military Construction Program only the most urgently needed projects can be considered for approval, where urgency criteria is based on the greatest benefit to the Navy with the least expenditure of training construction funds.

Toward the end of providing needed training facilities, in the FY74 Military Construction Program, $70,903,000 for the training investment category was approved by Congress. This was 11% of the total Military Construction Program. In the FY75 Military Construction Program, Congress approved a training portion of $50,091,000 or 8.3% of the total program.

For the FY76 program a request for $108,015,000 for training — 12% of the total program — is now pending congressional review, and for FY77 a training package of $46,499,000, amounting to 6.3% of the total program, is being considered.

Orote Point before



Orote Point after

A New Life, A New Home

BY LT. MICHAEL W. SHELTON, CEC, USN

• Guam

The rapid collapse of the South Vietnamese Government and the ensuing exodus of refugees set the stage for one of the most challenging assignments ever carried out by Naval Construction Forces. Although some preliminary planning was done with the intention of spreading an estimated 200,000 refugees to at least 10 Asian countries, these plans fell through when objections were raised by foreign governments over the possible political consequences of accepting the refugees. As the only U.S. territory in the Western Pacific, Guam became the focal point of refugee operations.

Foremost among the problems facing planners of this operation, christened "Operation New Life," was the lack of adequate facilities to handle an estimated 50,000 refugees who would be on the island at any one time. The total civilian population of Guam is just over 80,000 and this influx of people could have an adverse effect on the island community. Although there were some abandoned barracks which could be refurbished, there were not enough facilities to handle the refugees. One entire camp was needed for 40,000 evacuees alone.

In the early morning of April 23, 1975, NMCB Four, under Cdr Malcolm J. MacDonald, CEC, USN, received directions to suspend current construction projects, secure all job sites, and stand by for further instructions. By mid-morning, the first directions were received from the 30th Naval Construction Regiment, under the command of Capt William J. Burns, Jr., CEC, USN.

The battalion was to refurbish the old Seabee camp at Asan Point and have it ready to accept the first group of refugees by the following morning.

The Asan Point camp consisted of two-story wood frame barracks on concrete slabs with tin siding. Abandoned for over three years, the camp was overgrown with weeds, had no functioning electrical or plumbing systems, was filled with abandoned and excess material, and was in disrepair. The buildings, however, were sound.

Working in cooperation with the Public Works Center, Guam, NMCB Four began the clean-up with every available man. Not only were equipment, utilities and construction companies mobilized, but all of Headquarters Company, with its administrative personnel, pitched in.

While PWC personnel concentrated on main power distribution lines, main water lines and sewage lines, NMCB Four cleared the camp of trash, set up a field galley and prepared secondary wiring and pumbing systems.

While the Asan Point clearing operations continued, a decision was made to build a tent camp for 40,000 people on Orote Point. Orote Point is a long-abandoned World War II airfield.

Dense tangen-tangen (jungle brush) had grown up around the asphalt main and crosswind landing strips. Before tents could be set up, a massive land clearing operation was needed. With refugees arriving at the rate of approximately 2000 a day, it was clear that speed was required.

By mid-day on April 23, NMCB Four was tasked with the construction of "Tent City," as it came to be known. The goal was 2000 16' x 32' squad tents to be set up in 7 days.

In addition to land clearing and actual tent set up, the list of critical related requirements — such as water, electric power, sanitary, eating, administration processing and medical facilities — was considerable. Together with personnel from PWC Guam and OICC Marianas, NMCB Four immediately began construction operations.

From the outset, responsibility was well-defined and closely coordinated. PWC Guam was responsible for providing main power and water distribution lines, trash removal, and personnel and services beyond the battalion's capability. OICC Marianas provided contract support in both services and construction beyond PWC and battalion capability.

NMCB Four was responsible for land clearing, tent set up, installation of secondary electrical and water lines, manufacture of toilet facilities and showers, transportation and other equipment support to include light plants, generators, and general support of the camp as required.

Land clearing began on the afternoon of April 23 and the first tent was in place by 10:00 a.m. on the 25th. The battalion was organized into two 12-hour shifts that allowed 24-hour operation, seven days a week.

New Life (cont.)

To meet requirements, additional personnel were requested. NMCB Forty sent a 38-man detachment from Okinawa. Cdr Robert E. Quinn, Jr., CEC, USN, Commanding Officer of Forty, assumed command of the Orote Point camp and was charged with administration and processing of evacuees.

Their detachment set up the first galley at Orote Point and operated it on a 24-hour basis. NMCB One Seabee Team 0112, en route to Trust Territories, provided assistance in constructing a processing center, as well as other support tasks.

Volunteer workers were requested from local Navy commands, and the USS *Hector* and USS *Proteus* responded. Crews from these two ships pitched in immediately.

The hard-working "fleet sailors" made an important contribution to meeting the tent set-up schedule.

On May 1, the Army's 45th Support Group arrived. This command was composed of units from all over the United States and the Pacific. The 702nd Medical Clearing Company was flown in from Fort Meade, Maryland; and Army cooks from Korea, Hawaii, Japan and the mainland.

The Army assumed administrative responsibility for galleys, medical, processing and security. Construction responsibility, however, remained with NMCB Four.

The remaining chapters of "Operation New Life" can be told by the statistics. The chart indicates major work accomplished — but cannot include the multitude of small tasks accomplished in conjunction with this operation.

Project New Life

Type of Work	27 April	1 May	8 May	15 May
Site Prep/Cleaning	250 Acres	400 Acres	450 Acres	450 Acres
Water System %	17%	48%	99%	100%
Showers	16	63	102	148
Elec. Systems	12%	49%	94%	100%
Tents, total	100	2359	3546	3546
Berthing (incl. 591 10'x14' tents)	1007	2286	3381	3381
Galleys W Elec. & Water Services	1 (NMCB 40)	4	7	9
Hospitals	1	2	2	2
Sea Huts	2	2	10	25
Heads	98	131	210	400
Fencing	1300 ft.	9000 ft.	12000 ft.	17000 ft.
Tent Decks	0	0	100	400

Several lessons were learned or reemphasized during this operation, and some rapid camp building techniques were devised. The lessons learned included the following:

• The importance of pre-positioned contingency materials. The sudden requirement for facilities to handle 50,000 people required stripping tents, galleys, etc., from throughout the Pacific and locations in the Continental United States. In the event of a natural disaster, such as a typhoon, it is not inconceivable that such a camp may be required again; hence, supplies should be prepositioned for that eventuality.

• The value of an exact definition of responsibility for tasking and close coordination of effort under a unified command. This precludes wasted or double effort and clearly defines the chain of command.

• The value of assigning priorities on required logistic support. Although all materials ordered for Project New Life received a "999" designation, priorities were assigned by logistics personnel as the situation demanded.

• Careful control of motor vehicle assets for transportation and unloading supplies is mandatory. In many cases, the limiting factor in moving supplies was not airlift or vehicle transportation, but backlogs which overloaded existing forklift capabilities. Close attention to delivery schedules and shift utilization can reduce this problem.

• When working in areas with a coral sub-base or with other hard surface conditions, tent stakes made from rebar can be driven by jackhammer at considerable time savings.

• The principal problem with an unimproved camp after installation of utilities is sanitation and drainage. Use of surveying crews will identify and anticipate drainage problems for rain water runoff. Water runoff from the galleys require grease and food traps to prevent clogging of drains and ensuing pest problems.

• The "four-holer" latrine, used extensively in South Vietnam, with burn-out containers, proved inefficient and a waste of material. The refugees refused to utilize the laterine at a rate of more than one person at a time. Furthermore, the environmental consideration of burning the latrine contents or dumping them into the sewage system was a problem in itself.

MAKING 'NEW LIFE' LIVABLE — One of the first tasks confronting Seabees was clearing dense stands of "Tangen Tangen" around Orote Point airfield. Heavy clearing equipment (above) was needed to strip the tropical growth from areas to be used for tents. Crews worked around the clock (below) to meet the goal of setting up 2,000 squad size tents to house Vietnamese refugees.

Diesel oil would be dumped in such quantities that it would soon become an oil spill after leaving the sewage system at the outfall. This necessitated use of septic pumping trucks continuously and discharging effluent into the sewage system without dilution except for water.

The latrine problem was solved by the design of a "two-holer" burn-out latrine. This design proved both efficient and effective, and is conducive to assembly line construction.

Three energy-efficient ways to achieve

CLEAN WATER

BY NORMAN A. SCHMOKEL
Naval Facilities Engineering Command

• Alexandria, Va.

The 1972 Federal Water Quality Act requires the best technology available to meet its provisions. The sanitary engineering profession has interpreted this requirement to mean use of regional systems employing conventional secondary and tertiary technology.

Both large treatment systems and conventional technology, in normal use, are high energy users. They also require advanced technical training to operate and maintain.

A recent Environmental Protection Agency survey found a lack of trained operator technicians. This, coupled with dramatic energy costs increases, has resulted in a re-evaluation of regional systems and conventional treatment technology. This re-evaluation includes a look at the use of land as a process for wastewater treatment and/or disposal.

The main feature of this process, which makes it an attractive alternative to conventional processes, is its low energy and technology requirements. It is also easily adaptable to small, highly variable wastewater flows and to some types of industrial wastes.

Land application of wastewater is not a new concept, and in various forms has been used for many years. These various forms can be categorized into three basic types: irrigation, infiltration-percolation, and overland flow. In actual practice, these basic types are normally combined with each other or with a conventional treatment process to provide a total treatment package.

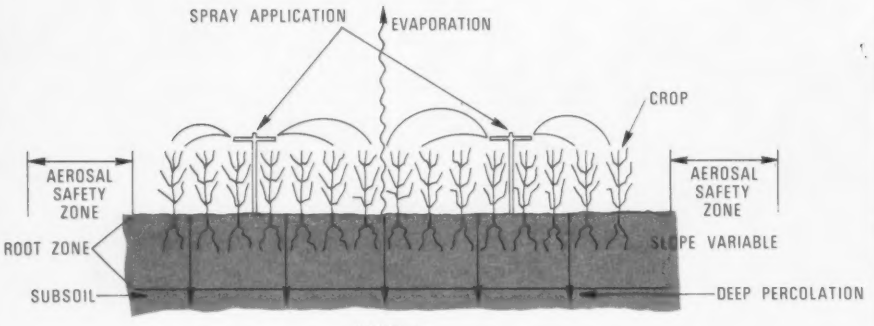


FIGURE 1
IRRIGATION

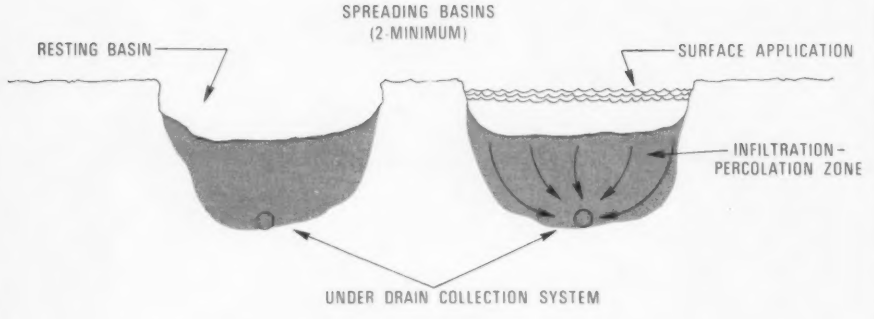


FIGURE 2
INFILTRATION - PERCOLATION

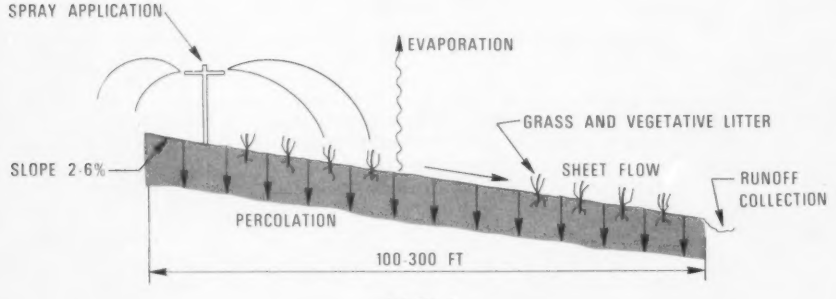


FIGURE 3
OVERLAND FLOW

The main advantage of irrigation is that it provides a tertiary treatment alternative resulting in zero discharge to surface waters. This type of land application is normally preceded by either conventional secondary treatment or one of the other two types of land wastewater treatment.

Its main disadvantage is the large area of land required. Another factor to be considered when evaluating this disposal system is spray effect. The spray system must be designed to minimize aerosol effect and resultant health problems.

The infiltration-percolation method uses a series of spreading basins and an underdrain collection system. It is normally preceded by conventional secondary treatment and is then used for irrigation or is discharged.

The main advantage of this system is that it produces an effluent quality equal to tertiary treatment with minimum capital and operating costs. It requires a relatively sandy soil and low water table.

The overland flow method, a relatively new development, has as its main advantage the fact that it can produce a nearly tertiary quality effluent from only primary treated wastewater. In this method, primary treated wastewater is sprayed onto grass covered slopes and allowed to run off through vegetated litter.

The effluent is then collected for further treatment by either infiltration-percolation, irrigation, or is discharged directly to receiving water with adequate assimilative capacity. Use of this system requires relatively impermeable soil and gently sloping terrain.

When considering these land applications, the following factors must be evaluated:

- Land availability
- Soil types and drainability
- Topography
- Ground water levels and quality
- Underlying geological formations
- Climate
- Characteristics of waste
- Discharge standards

Land disposal of wastewater is a viable treatment alternative and should be considered, where appropriate. This article, however, is not an endorsement of land application of wastewater to solve all disposal problems.

Its intent is only to inform the reader this option is available and should be considered when developing a wastewater treatment/disposal system.

'Carping 'About Weeds

• Orlando, Fla.

Five thousand tropical fish have been "recruited" by the Navy in Florida for a unique research project. The Navy plans to use an exotic fish, in this case the White Amur or grass carp, to help eliminate a serious water weed problem in Lake Baldwin at the Naval Training Center at Orlando.

The three-year experiment, conducted in cooperation with Florida's Game and Fresh Water Fish Commission, will be monitored by the Southern Division, Naval Facilities Engineering Command, Charleston, S.C. SouthDiv will coordinate technical aspects of the work for the Navy. The research work will be done by biologists of Florida's Natural Resources Department.

For years, water weeds in Lake Baldwin have impaired swimming, boating, fishing and water skiing by Navy people. Efforts to control the heavy weed growth with expensive applications of chemicals have not been completely effective.

The Navy's new project calls for a combination of partial chemical control and use of the weed-eating grass carp, a method intended to achieve "balanced" control of weed growth.

This procedure has never been tried for any length of time in large lakes, so success is not completely assured.

Known as nature's "watergoing lawnmower," the grass carp is a member of the minnow family. It feeds on elodea, a primary water weed in Lake Baldwin, but will eat a number of other weeds also. A yearling grass carp can gain four to seven pounds annually. In taste, it is rated above whiting, channel catfish and trout. It will not bite on conventional artificial lures or worms except under weed-free conditions.

WEED MUNCHER — This fellow — and 4,999 others — help clear weeds from Navy lake.

Grass carp do not spawn naturally in southern waters. They are artificially induced to spawn by the injection of hormones in females. This fish originates in northern China and southern Siberia, lives for 10 to 15 years, and can reach 100 pounds in size.

In Lake Baldwin, some 25 fish per acre were stocked but only 10 or 12 fish per acre will survive because of the change in environmental conditions between the hatchery and the lake.

If the Lake Baldwin project is successful, perhaps the Navy's weed eaters will be stocked in other military ponds and lakes in the south where water weeds have become a critical problem.

See a related article on the White Amur in the Spring 1974 Navy Civil Engineer Magazine.

TIMBER BY THE POUND

PERCHED on a scale is this truckload of timber harvested — by the pound — from a SouthDiv NAVFAC installation. Selling Navy timber by weight, rather than volume, has proven highly successful.

BY KEITH D. LANGE, R.F.
Staff Conservationist SOUTHDIV NAVFAC
• Glynco, Ga.

Navy activities in the South which have land with tree-growing potential are required to prepare and implement Long Range Forest Management Plans. These plans call for many different long-term improvements such as reforestation fire prevention, erosion control, and other similar actions.

Equally important is removal of some timber. For the most part, timber sold is that which the Long Range Plan recommends be sold. Forest stands require periodic removal of diseased, unhealthy, slow growing or otherwise unwanted trees. The best trees are left for future growth and development.

To accomplish this, trees to be sold are individually identified, then advertised and sold by competitive bidding to pulp and paper, pole, lumber and veneer companies. In this selling procedure, a novel and very successful method of selling the timber has been tried — timber by the pound!

This method was developed by the Southern Division because of difficulties encountered in lump sum sales; a method used exclusively in the past. Government foresters marked with paint the trees to be removed from the forest, and estimated the volume. The timber was then advertised with the government's estimated volumes provided to the bidders but not guaranteed.

It was found in most cases, prospective bidders conducted their own cruise or field estimate of the volume in the marked trees before submitting their bids. This cruise helped them confirm the government's estimated volumes. Even with the confirming data, it was found that bidders nearly always reduced their total lump sum bids significantly to cover the risk of getting less volume than was advertised.

This indicated the government was receiving less for the timber because of the lump sum risk factor.

It was decided to sell the timber on a unit price basis to eliminate the high risk factor, and to earn more for the Navy's timber. Unit price sales were new. Such sales required individual measurement of the wood by government personnel before its removal from government property. This was usually done by conventional hand scaling or measurement which was time-consuming and expensive.

The new method developed was a unit price sale by weight. Instead of scaling or measuring, the timber is loaded on trucks and weighed. It was thought this would provide a quick, convenient, accurate, acceptable measurement for both government and buyer, and would also be more economical. Preliminary tree volume estimates by the government would take less time because they would not have to be as accurate.

Bidders would not need to make cruises to confirm the volume to be sold. This would save administrative expenses to both parties.

The first sale was made at Naval Air Station, Glynco, Georgia, in 1969 and proved successful. The timber was offered for sale by the ton. After contract award, the buyer removed the trees in the usual way: small trees as pulpwood and large trees as sawtimber; but paid a single price per ton for all wood regardless of product removed.

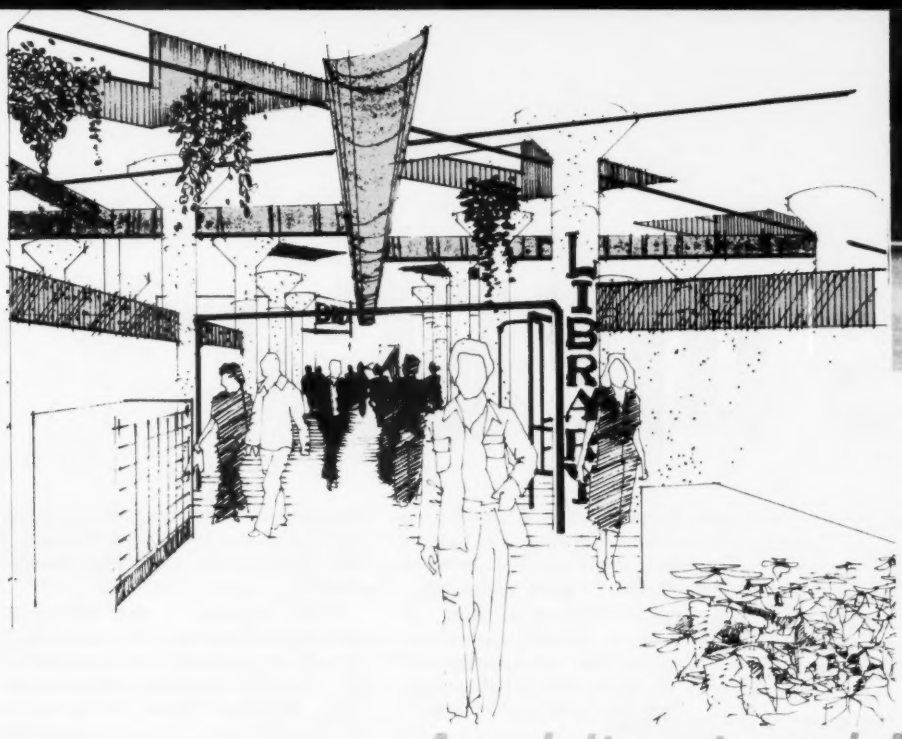
The bidder's single price reflected the proportionate value difference of the two products. The buyer loaded his timber on trucks and moved it to Navy checkout gates where a record of exit was made. The buyer then weighed the wood outside the activity at scales acceptable to the government.

Certified weight tickets showing gross and net weight were obtained by the buyer and forwarded periodically to the Navy as evidence of volumes removed. Weight tickets received from the buyer were carefully checked with exit gate records to assure all truck loads were accounted for.

The new sale method was expanded and timber was sold at other activities the same way. Foresters confirmed much less field work was needed in making volume estimates of trees marked. Volumes advertised did not need to be precise since the buyer paid for only the amount actually removed and contracts permitted a 25 percent difference in the amount advertised and amount actually removed.

Because of the success of the new selling procedure, nearly all timber in the Southern Division is now being sold by weight. On some activities, truck scales are made available. In such cases, timber is weighed before it leaves the installation.

Because of increased public recognition for conservation of our natural resources, the degree of utilization of trees harvested by wood-using industries is increasing every year. This has also resulted in increasing the total income to the Navy under the weight sale system. Wood formerly left in the forest by buyers as "non-merchantable" is now being logged and used—and in so doing, the Navy is paid for each pound!



Metamorphosis

As it was in the beginning, is now, and (left) as it shall be! A warehouse at Philadelphia is being converted to office space. Warehouse design elements are retained to give a light, bright look. Below is the proposed external elevator and main entrance.

BY PETER McBURNEY
Project Architect,
NORTHDIV Design Division

Architectural Renewal

• Philadelphia, Pa.

Recycling architecture provides unique challenges and a team of Northern Division architects and engineers has developed some equally unique solutions to a new design project. Much in-house energy and talent has been directed to converting a building at the Defense Personnel Support center in Philadelphia from warehouse space into an office-administration area.

From the first walk-through of the four-story concrete-and-masonry warehouse to making field measurements, the Northern Division team has been impressed by the potential of this existing facility. Built in 1941, the building is 1,000 feet long and 200 feet wide. The project focuses on the extreme west bay of the fourth floor which has about one acre of interior space; while considering continuity of the design scheme throughout the structure.

Oriented toward a specific procurement activity, the program calls for extending stairwells, providing an exterior elevator, new mechanical and electrical systems, a new service core, and an up-graded entrance providing accessibility for the handicapped.

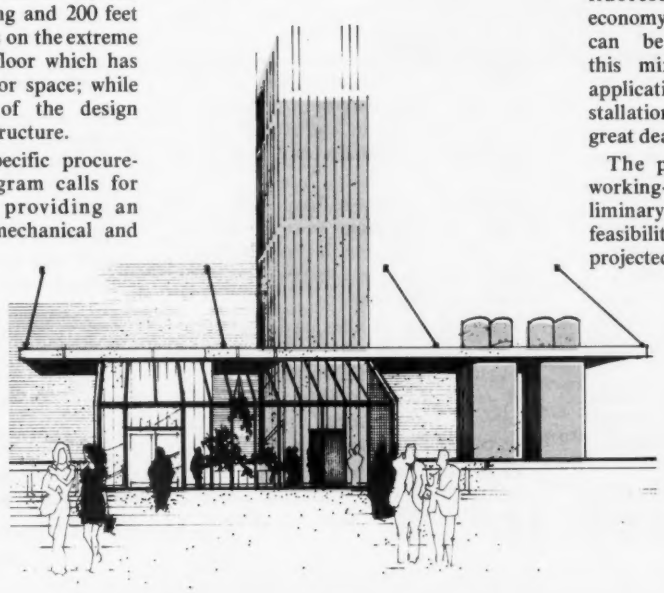
NORTHDIV's architectural branch is allowing the inherent architectural features: large windows, skylight monitors, high ceilings and massive mushroom-capped columns, to guide and organize the flow of functions that will occupy the space. Graphics, color-coding, exposed systems, and minimal use of enclosed areas are the design elements used to create a light, bright atmosphere.

The architectural team kept windows, skylights and the existing ceiling height to escape the sandwich effect created by blocking windows and suspending ceilings in such a large area. This offered challenges to the mechanical and electrical branches, which have had to comply with strict energy conservation measures.

The mechanical branch met its challenge using the AXCESS computer program from FASCO at Port Hueneme. It also seems their work, which is so often hidden, will become a main design element.

The electrical branch proposed a mixture of high-pressure sodium and mercury-vapor lighting to give a fluorescent color-index rating and economy of energy usage. As far as can be learned from consultants, this mix will be a first for office application and its design and installation is being monitored with a great deal of interest.

The project is now well into the working-drawing stage, and with preliminary cost estimates pointing toward feasibility of construction, occupancy is projected for spring, 1977.



Need a flange-lipped Widget maker? Call...

DIPEC

BY R. SIDNEY ARTHUR
Public Works Center Resource Management Branch, NAVFAC HQ

• Alexandria, Va.

Ever wonder what happens to that nice new lathe ordered by a naval activity — and that activity closes before the lathe is delivered? This can, and does, happen.

The lead time for ordering new industrial plant equipment can be from six months to a year or longer. In this time requirements may change, missions may change, and yes, activities may close.

The result is excess plant equipment or, as it is often called, idle plant equipment. Plant equipment can be idled for other reasons. By up-grading their equipment, defense installations may have no further need for older but still usable equipment.

Does anyone use this equipment? You bet. Navy Public Works Centers have acquired a wealth of equipment for their public works shops.

Equipment defined as industrial plant equipment is controlled by the Defense Supply Agency through their Defense Industrial Plant Equipment Center (DIPEC). But just what is industrial plant equipment?

It is that part of plant equipment with an acquisition cost of $1,000 or more; used for cutting, abrading, grinding, shaping, forming, joining, testing, measuring, heating, or otherwise altering the physical, electrical or chemical properties of materials, components or end items entailed in the manufacturing, maintenance, supply, processing, assembly or research and development operations.

Pretty heady? This can all be summed up as simply Class IV property. A complete list of covered items is maintained by DIPEC.

Just who or what is DIPEC? Basically, DIPEC is a major field activity of the Defense Supply Agency established to provide common supplies and services to the military departments in the management of industrial plant equipment.

Their particular responsibility, of interest to us, is screening modernization, utilization and new procurement against a central inventory of idle equipment to assure maximum reutilization.

In short, they act much like a clearing house matching requirements against available equipment.

But does it all work? The experience of the Navy Public Works Centers is that it does work and works quite well.

For example, in FY74, 75 percent of all public works shop equipment requirements for public works centers were industrial plant equipment, that is, equipment controlled by DIPEC. DIPEC was able to supply equipment to satisfy 32 percent of that requirement which represented $468,940 in hardware.

Of all equipment offered ($546,377) only $77,437 was determined unsuitable for use by a public works center and that determination was made by the public works center requesting the equipment.

In this same time the amount of funds available for purchase of new equipment was only $300,000. From this it can be noted equipment supplied by DIPEC was 56 percent higher than new equipment purchases or 61 percent of all acquisitions of industrial plant equipment at public works centers in FY74.

Types of equipment have been quite varied, ranging from saws of various sizes and types, to lathes, welders, shears, bending machines, dynamometers, and blasters.

While much of this equipment has seen considerable use, it has all been thoroughly reconditioned by DIPEC and is in good working order when received. Several items received were new, having never been used before.

Procedures for obtaining this equipment are relatively simple. Once a requirement has been identified, a defense activity prepares a DOD Industrial Plant Equipment Requisition and forwards this to DIPEC through channels.

DIPEC maintains a data file on all equipment declared idle under their control, equipment located either at their activities or other defense activities. All requisitions are screened against this data file by commodity managers.

These individuals are experts for their commodities and they screen not only for exact matches but also for other items in the system that will satisfy the requirement. The data is displayed on cathode ray tubes at several computer readout stations within the DIPEC complex.

Here the commodity manager can determine quickly what equipment is available. If the requester has included a telephone number, the commodity manager will often call the requester and discuss alternate means of meeting the requirements with available equipment.

Once an item is offered, the activity is encouraged to inspect the item either with its own personnel or personnel from another activity. Public Works Centers, by virtue of their world-wide locations, are invariably close to the offered equipment.

For example, when a lathe in Mechanicsburg, Pa., is offered to PWC Subic Bay, PWC Great Lakes will arrange an on-site inspection, if necessary.

All packing, crating and transportation as well as all costs of repair before shipment are at the expense of DIPEC. Accepting activities may specify needed repairs. DIPEC, of course, has the option of withdrawing the offer but will normally make all reasonable and necessary repairs.

You may be pleasantly surprised. Navy Public Works Centers have tried this system and are finding previously owned plant equipment can fill a real need well.

COAL AND ITS USES

• Alexandria, Va.

During FY73, the Navy used about 23 percent of its total consumed energy for shore installations. Today, due to curtailment of fleet operations and training, the shore utilities portion of the Navy's energy needs are approximately 40 percent of the total.

Of the total energy used at shore installations, slightly over 93 percent was used for utilities. During FY74, the Navy consumed slightly over 112 trillion BTU's from oil, gas, and coal. More than 68 percent of this was supplied as fuel oil, over 28 percent as natural gas and propane, and only about 3 percent as coal.

It is noteworthy that the Navy utility consumption pattern is completely contrary to domestic fossil fuel availabilities as based on recoverable reserves. Even though petroleum and natural gas each account for approximately 5 percent of our known recoverable reserves, each of these fuels is providing a substantial portion of the Navy utility, and our domestic, energy requirement.

KNOWN RECOVERABLE RESERVES

Fuel	10^{18}BTU	Percent of Total
Coal	4.60	83.94
Petroleum	0.28	5.11
Natural Gas	0.28	5.11
Natural Gas Liquids	0.03	0.55
Shale Oil	0.29	5.29
Total	5.48	100.00

To develop the means better to use our vast reserves of coal in an environmentally and economically acceptable fashion, the Navy Facilities Engineering Command (NAVFAC) is investigating the applicability of fluidized bed boiler technology for Navy usage.

In a recent agreement between the Commander, Naval facilities Engineering Command and the Deputy Administrator for Fossil Energy, Energy Research and Development Administration (ERDA), the Navy agreed to take part in an ERDA project to develop and demonstrate the applicability of fluidized-bed technology for industrial applications.

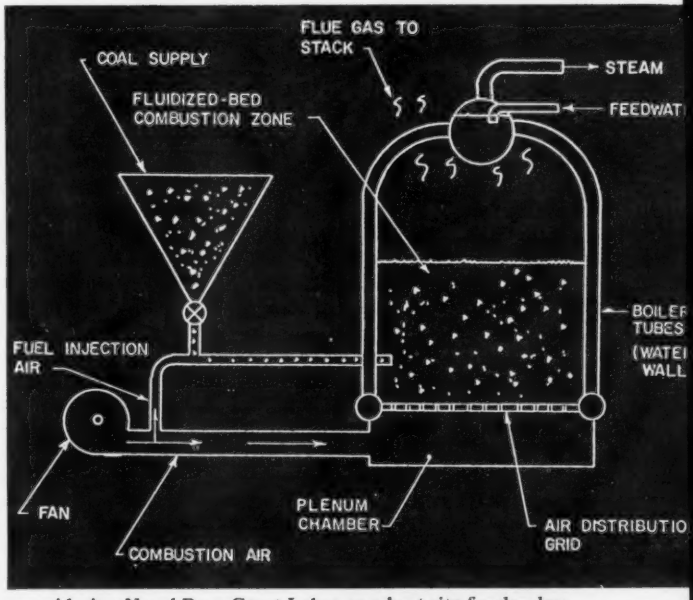
An atmospheric fluidized-bed boiler consists of a water-cooled wall furnace enclosure containing horizontal boiler tubes immersed in a fluidized bed. The fluidized bed is simply a mass of granular particles held in a dense suspension by an upward current of air. The mixture of air and particles exhibit the properties of a fluid.

The boiler enclosure supports a stationary grid with special tuyeres through which combustion air is blown. The velocity of the upward air flow causes the solid particles to become suspended, thus forming the fluidized bed. Coarsely crushed coal added to this bed burns very rapidly.

Heat released by the burning coal is transferred to the inert bed particles and, in turn, to boiler tubes in the bed. This concept appears capable of reducing emissions of sulphur oxide to acceptable levels thrugh the use of limestone as a bed material.

Since fluidized-bed temperature is relatively low, it is expected nitrogen oxide emissions will be acceptable.

NAVFAC is working with ERDA to define and develop fluidized-bed boilers for DoD usage. To this end, ERDA is



considering Naval Base Great Lakes as a host site for development of fluidized-bed boilers in the 50,000 to 150,000 pounds of steam per hour class The proposed development site has many advantages. These include:

- The existing Public Works Center, Great Lakes central heating plant can supply up to 750,000 pounds of steam per hour at 650°F. The nature of the steam plant load and the characteristics of the existing installation insure steam produced by a developmental boiler can be accommodated.
- The Great Lakes site is convenient to many interior region coals. Specifically, the interior region of our country contains large reserves of high BTU, high sulfur content coal. Means must be found to keep this coal in the energy market.
- The Great Lakes site is easily accessible, has a large coal silo, and supporting utilities and facilities are available.

To develop and use our abundant coal resources, NAVFAC is working with ERDA providing managerial and technical support and is developing a Great Lakes Site Plan for an ERDA fluidized-bed proposal for industry.

BRICK PANELS — Workers in a climatically-controlled shed first build brick panels using a special morter (above). Panels of various sizes are then hoisted and "manhandled" into place on the building exterior (left). Brick panels reduce cost and allow the contractor quickly to close building exterior (below).

BRICKS: Now cast as low-cost panels

By LCDR ROBERT B. BELL, JR.
CEC, USN
Resident Officer in Charge of Construction, Gulfport Area

An unusual construction feature of the new Naval Home is the use of precast *brick* panels. Nearly 900 of these panels will gird the eleven story residential tower section of this new retirement residence for Navy and Marine Corps veterans.

The Gulfport complex replaces facilities in Philadelphia that date back to the mid-1800s.

The use of brick faced exterior walls was dictated by the desire to create a truly residential atmosphere and to avoid a "commercial high rise" appearance. The high cost of brick work through eleven stories required consideration, however, and the result is the precast brick panel which combines the desired appearance features of a brick facing with the economies and the rapid installation of precast panels.

The brick panels are manufactured on the site in a specially constructed building by the masonry subcontractor. Each of the panels is laid in a steel frame jig to ensure adherence to close tolerances and is retained there for three days. The panels are moved to a curing shed for another three days or directly to open storage if the temperature permits.

Both single-faced and multi-faced panels will be used. The single-faced units are generally the larger ones—the largest being 17' x 15' and weighing 9500 lbs. The multi-faced panels vary in size and configuration and include U-shapes and W-shapes.

The key element in the entire process involves a special additive that is incorporated in the mortar mix for the panels. This additive is a liquid saran polymer which greatly enhances the bonding, compressive and tensile strength of the resultant mortar, permitting the panels to be easily moved and lifted into place.

Actual bricklaying is the same as with regular mortar. Temperature control in the casting shed is essential in cold weather for the panels must be kept in an environment of at least eighty degrees for 72 hours.

On the other hand, as a side benefit of this requirement, the masons are unaffected by inclement weather and progress is constant through cold and rainy winter months. It is also important to clean spilled mortar from the bricks before it hardens. Normal brick cleaning procedures are inadequate and the panels have been steam-cleaned before they were moved to the curing shed.

The completed panels are handled easily by forklift and crane. Strongback and cables are passed through the panel eight to ten courses from the top. They are carried individually to the building tower and hoisted by crane and then manhandled into place.

The panels are bolted to the structural frame. Butyl rubber caulking is provided in all joints, with flashing also added in the horizontal joint between the top of one panel and the bottom of the next one. Rigid urethane insulation board is attached to the inside face of the panels.

Erection of the panels for the entire tower has proceeded smoothly at an average rate of nearly fifteen panels installed per day. Thus the contractor was quickly able to close in the building as soon as the structural frame was completed. He also avoided the need to erect and maintain scaffolds and to hoist raw masonry materials throughout the eleven story height of the tower section.

The project is being constructed by Dyson and Company, Pensacola, Fla., for the Naval Facilities Engineering Command. The project architect-engineer is John L. Turner and Associates of Jackson, Miss.

Local administration is by the Resident Officer in Charge of Construction, Gulfport Area. The project is scheduled for completion in April 1976.

Navy Construction Force Review

By LCDR S. R. HOLM, JR., CEC, USN,
Seabee Division, NAVFAC HQ

Fiscal Year 1976 has brought some changes to the size and scope of the Naval Construction Force (NCF). A decision by the Secretary of Defense will find the force level reduced to eight NMCBs by the end of the fiscal period.

NMCB-71 was disestablished on 30 June 1975 after completing a successful deployment to Bermuda and named as the Atlantic Fleet Best of Type. NMCB-10 will be disestablished on 30 June 1976 shortly after the battalion completes its deployment to Guam.

On the plus side, Congress has authorized the construction of several additional projects on Diego Garcia. Included are: extension of the existing runway; additions to the power plant, subsistence building and receiver building; additional personnel support and supply facilities; and expanded pier and POL facilities. Seabee effort on Diego Garcia is expected to continue through late 1978.

IN THE PACIFIC FLEET

NMCB-3 has recently completed its deployment to Diego Garcia where its project workload included the POL facility, gymnasium, medical facility and the chapel/library building.

NMCB-4 is currently in homeport at Port Hueneme after successfully completing its deployment to Guam. The battalion was named Best of Type in the Pacific Fleet after its outstanding effort and response in support of Project New Life, the Vietnamese refugee program which saw the Seabees construct a tent city to house some 50,000 refugees.

In addition to this support, NMCB-4 made considerable progress on regular projects on Guam including a major swimming pool complex at the naval hospital; a culvert and earthmoving project at the naval magazine; a CPO club, community center and teen center at the naval communication station; and four steel buildings at Polaris Point (Guam's submarine facility)—all of this while the unit was maintaining a high state of military readiness as the Pacific Fleet Alert Battalion.

NMCB-5 has just deployed to Diego Garcia and will continue work toward completing the naval communication station there. The battalion is expending the majority of its effort completing the subsistence building, the POL facility, the station water distribution system and the bowling alley.

NMCB-40 is in the final stages on its homeport period in preparation for its deployment to Roosevelt Roads, Puerto Rico and is expecting to send details to Bermuda and throughout the Caribbean including Guantanamo Bay, Cuba and Vieques Island.

NMCB-10 is presently deployed to Guam on what will be its last deployment. As mentioned earlier, the unit will be disestablished on 30 June 1976 as a result of the force level reduction. It has been in active service since October, 1952 and has accumulated a superlative record of accomplishments.

IN THE ATLANTIC FLEET

NMCB-1 is presently deployed to Okinawa with details at Cubi Point and San Miguel, Philippines; Iwakuni and Misawa, Japan; and Taipei, Taiwan. Major projects include an EM Club at Camp Shields, and a recreational beach facility at

Camp Schwab, both on Okinawa; a navy exchange in Taipei and a dependent school project in Iwakuni.

NMCB-62 is currently in homeport at Gulfport, Miss., having completed a deployment to Rota, Spain, as the Atlantic Fleet Alert Battalion. The unit will deploy to Okinawa in relief of NMCB-1 in late January 1976.

NMCB-74 is currently deployed to Rota and has details throughout the Mediterranean, including Sigonella, Sicily and La Maddalena, Sardinia.

NMCB-131 will complete its deployment to Puerto Rico and will return to homeport to begin training for the battalion's upcoming deployment to Diego Garcia, where it can expect to begin work on several of the projects recently authorized by Congress.

IN THE RESERVES

Rear Admiral R. C. Esterbrooks, CEC, USNR-R recently relieved Rear Admiral P. V. King, CEC, USNR-R as Commander, First Reserve Naval Construction Brigade/Reserve Naval Construction Force. RADM Esterbrooks, who in civilian life is the county engineer for Maricopa County, Airzona, has moved his flag and staff to Phoenix, Arizona. RADM King has assumed duties of the Director, Naval Reserve Facilities Engineering Command.

CONSTRUCTION BATTALION UNITS

The construction battalion units (CBUs) are continuing their efforts in spearheading the Navy's Self-Help Program. Recently four CBUs within the NAVFACENGCOM chain of command were transferred to other major claimants. CBUs 407 and 402 went to Chief Naval Education and Training while CBUs 405 and 413 were transferred to Commander in Chief, U.S. Pacific Fleet.

These changes became necessary after NAVFAC's military end strength was reduced. CINCPACFLT and CNET provided billet compensation to assure that the benefit derived from these units would continue.

The preceding fiscal year proved to be both a good and a bad year for the NCF. On the positive side, Seabees continue to deploy around the world providing a construction contingency capability while accomplishing myriad required construction projects.

Unfortunately, the disestablishment of NMCBs 10 and 71 will end an illustrious career for these two battalions and will close this chapter of their history.

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1	CEC BASIC QUAL	19 138 12			
2	PUBLIC WORKS MGMT		17 89 12 22	90 2	
3	CONTRACT ADMIN	5 88A 16 PI	17 89 12 22	90 2	
4	CONST BATTALION		17 69 12 22	70 2	
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9	CEC OFFICERS NR*				
10	CEC OFF REFRESHER				
11	SHORE FAC PLAN	12 62 23		8 63 12	
12	ECON ANALYSIS	26 24 30			
13	CONST MGMT		2 9 13		
14	PCO/PXO INDOC*				
15	NETWORK ANALYSIS				
16	CONST CON NEG				
17	NAVY INDUST FUND			15 62 19	
18	AICUZ FAMILIAR		25 9A 26 WASH.D.C.		
19	ENVIRON PROTECT	6 6 9			
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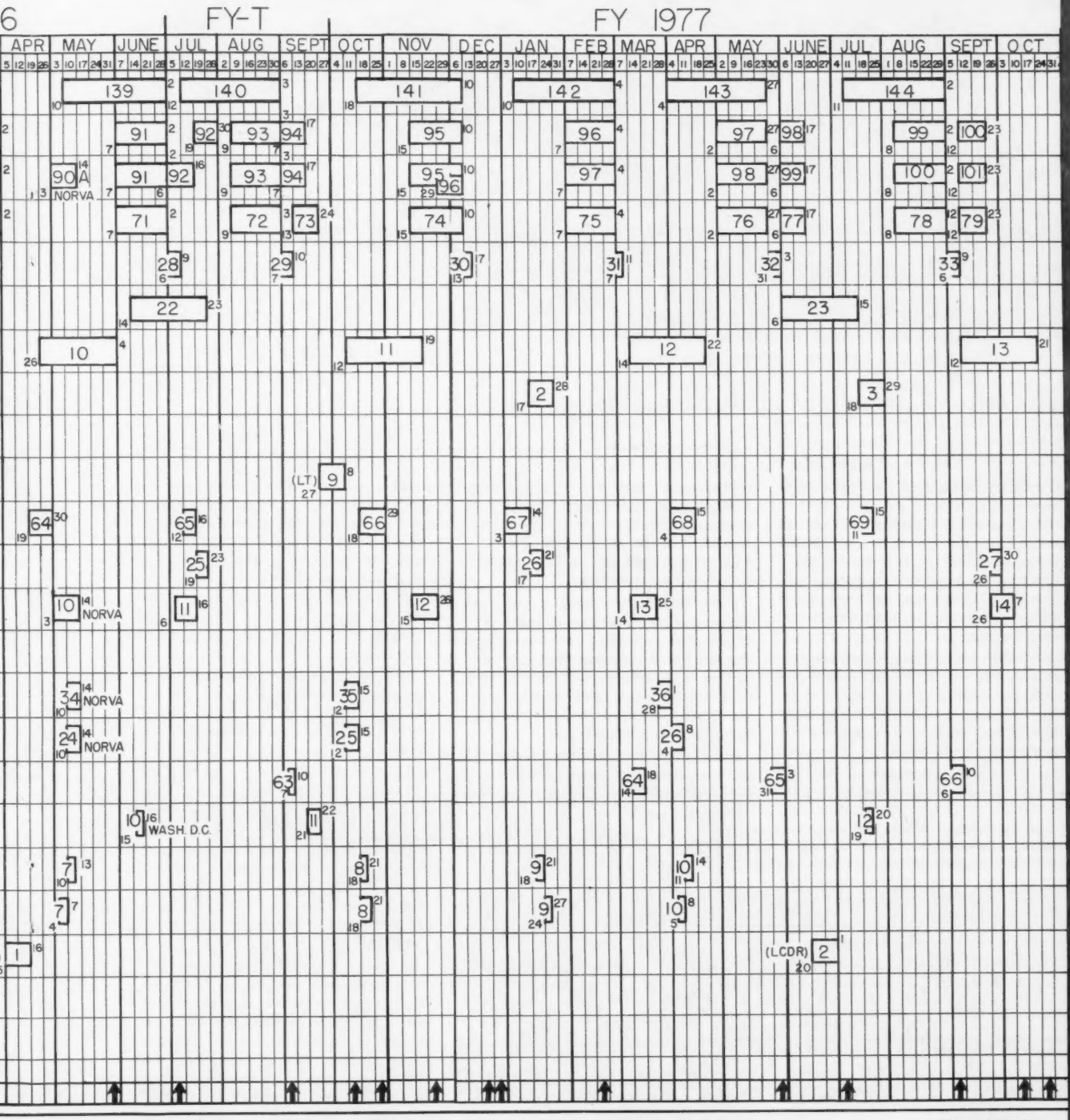
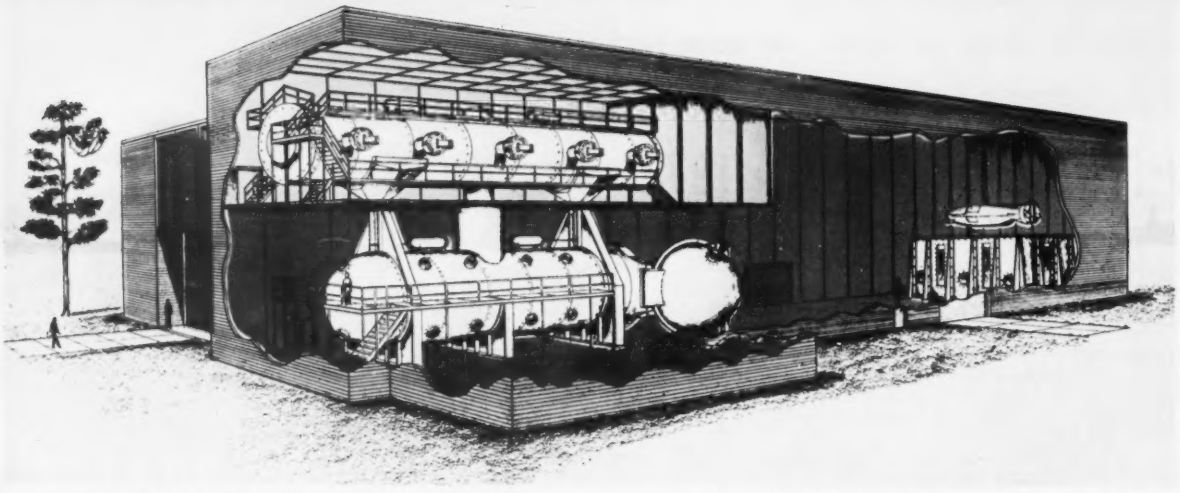
FISCAL YEAR 1976/1977



30TH ANNIVERSARY YEAR **1975**



The Ocean Simulator houses two chambers; one wet chamber 15 feet in diameter and 45 feet long, and a dry chamber complex eight feet in diameter and 62 feet long. The wet chamber is rated man-safe for pressures to 1,000 psi and will allow testing systems and equipment in a simulated deep-ocean environment.

Pseudo Sea

By KEN R. LESTO
SOUTHDIV NAVFAC

• Charleston, S.C.

The Ocean Simulation Facility, better known as the "OSF," is located at the Naval Coastal Systems Laboratory in Panama City, Florida. It is a complete and unique facility for research, development, test and evaluation of equipment and systems involving man working in simulated deep undersea environments.

The OSF includes a complex of chambers, man rated for safe operation to 1000 psi, consisting of a wet chamber 15 feet in diameter and 45 feet long and a 62 foot long upper dry chamber complex, eight feet in diameter.

The dry chamber complex consists of two 12 foot long main chambers, each containing an outer lock eight feet long. A center lock, 10 feet long, is interposed between the main dry chambers and is connected to the wet chamber below by a dry trunk eight feet in diameter and six and one half feet high.

Entry hatches in the dry chamber complex are 42 inches in diameter. The overhead entry hatch in the center lock and the hatch openings in the top and bottom of the center trunk are 48 inches in diameter. Small pass-through locks are located in the center lock, each dry chamber and each outer lock.

Each main dry chamber is sized to accommodate four men for extended habitation. Berths, lights, showers, potable water and sanitary facilities are provided. An emergency breathing system, communications, closed-circuit television surveillance, and an automatic fire protection system are provided. A personnel transfer capsule can be mated to the end of one of the outer locks to permit transfer of saturated subjects either for decompression or in an emergency.

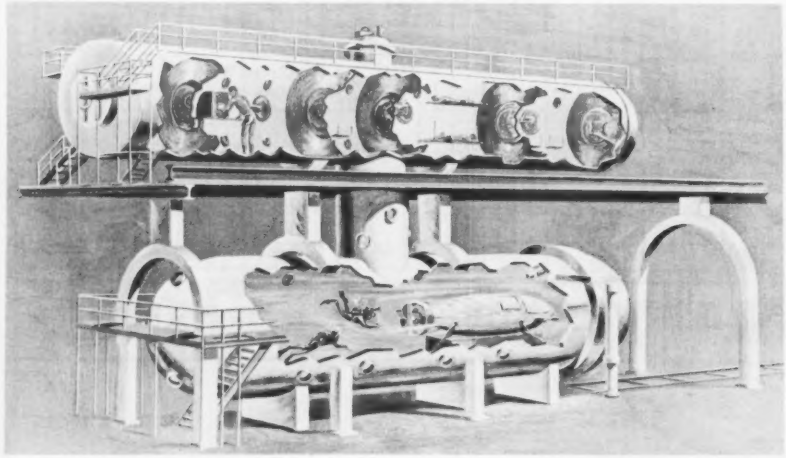
The wet chamber provides unusual flexibility for conducting a variety of man-machine test programs. One end of the wet chamber has a hemispherical door which provides full-diameter access for inserting large test vehicles and equipment.

Chamber volume is about 7,000 cubic feet and holds 53,000 gallons of water. Chamber wall penetrations are available for operating equipment and heating exposure suits. A complete lighting system is built into the chamber. Emergency breathing systems are located at various sites.

Monitoring and control of the chamber complex are carried out in the control room where a central console and other individualized consoles are located. Selected read-outs are provided at the central console for monitoring overall operation; and individual consoles permit control and monitoring of biomedical data, the environmental control system, chamber operation and equipment test data.

Closed circuit television permits visual monitoring of all chamber

AT SEA ON LAND — Artist's concept of the chambers showing two SCUBA-equipped men and a mini-submersible in the wet chamber. The upper dry chamber can house four men for extended times. Linking the two chambers is a six-foot-long dry trunk.



interiors. A gas analysis system is provided for analysis of chamber gas and trace gases throughout the complex.

The chamber complex is housed in a three story, 22,500 square foot structure which includes a high bay area, mechanical equipment room, biomedical and scuba laboratories, control room, administration facilities, checkout pool, experimental equipment assembly area and two bridge cranes.

The idea for a deep ocean engineering pressure facility became a formal request with the submission of a DD Form 1391 on Feb. 1, 1967 by the U.S. Navy Mine Defense Laboratory (now the Naval Coastal Systems Laboratory), Panama City, Florida.

Estimated cost at that time was six million dollars. Eight years and $10 million later, the "idea" has become a reality.

The project was designed and constructed under the direction of Southern Division, Naval Facilities Engineering Command. Because of the project's complexity, a separate Resident Officer in Charge of Construction office was set up at the site under the direction of LCDR Bob Edmiston.

After engineering feasibility studies to determine elements of the system, identification of the developmental work required, and programming sequence, a program cost estimate was prepared.

Sanders and Thomas, Inc. of Pottstown, Pennsylvania, was selected as the Architect/Engineer for the project and was awarded the first phase of the total design package in August, 1967.

DEEP HOME — ROICC Inspector Earl Allen indicates relative size of the dry chamber.

The programming sequence called for work to be accomplished in three segments or packages.

Construction of the building to house the pressure vessels was the first segment—or package A.

Construction began in July 1969 under Dyson and Company of Pensacola, Florida, and cost $1.2 million. While package A was under construction, the pressure vessels, package B, were being readied by Hahn & Clay at their Houston, Texas plant.

Cost of this portion totaled $2.4 million.

The package C portion of the project included life support systems, controls and instrumentation and was awarded to the Northrop Corporation of Anaheim, California, in November 1970.

Cost of package C totaled $5.7 million before the contractor completed work in May 1974.

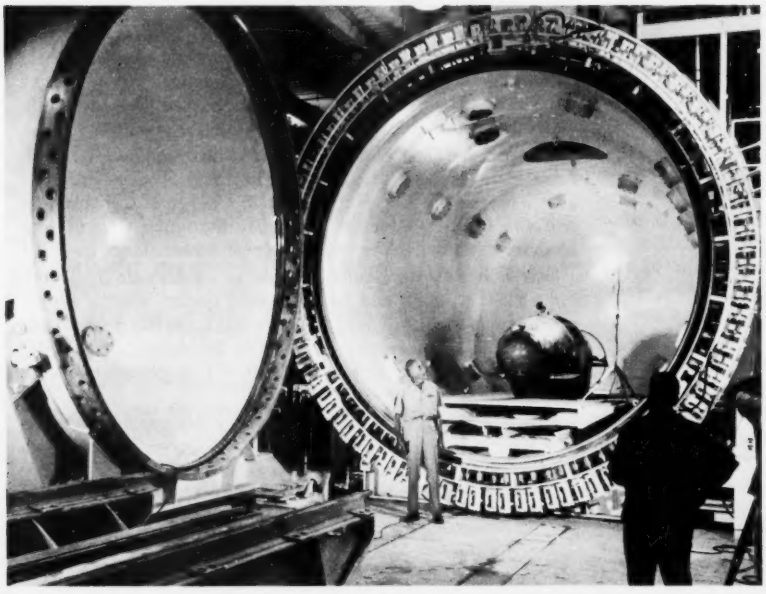
Any project of this type must be certified "man safe" before use. A system certification team, headed by Dr. M. Yachnis of NAVFAC, was assembled to assure the facility met all safety requirements. The certification team identified a number of modifications and corrections which were formulated into package D. This package was handled by Naval Coastal Systems Laboratory personnel and certification was granted in February 1975.

Certification stipulates the facility shall be operated manned or unmanned to a maximum depth equivalent of 2,250 feet of seawater at chamber shell temperatures not less than 34°F, and that seawater will not be used in the chamber.

Since certification and the beginning of operations by the Navy Experimental Diving Unit, approximately 12 dives have been made. Most of these were manned to depths of 30 feet to 750 feet. The latest dive involved five men for 24 days to a depth of 750 feet. A 30-day manned dive to 1,000 ft. is planned for fall.

Now that the OSF is an actuality, the Navy has available a testing facility in a controlled environment that provides distinct economic and safety advantages over testing under the unpredictable conditions of the open sea.

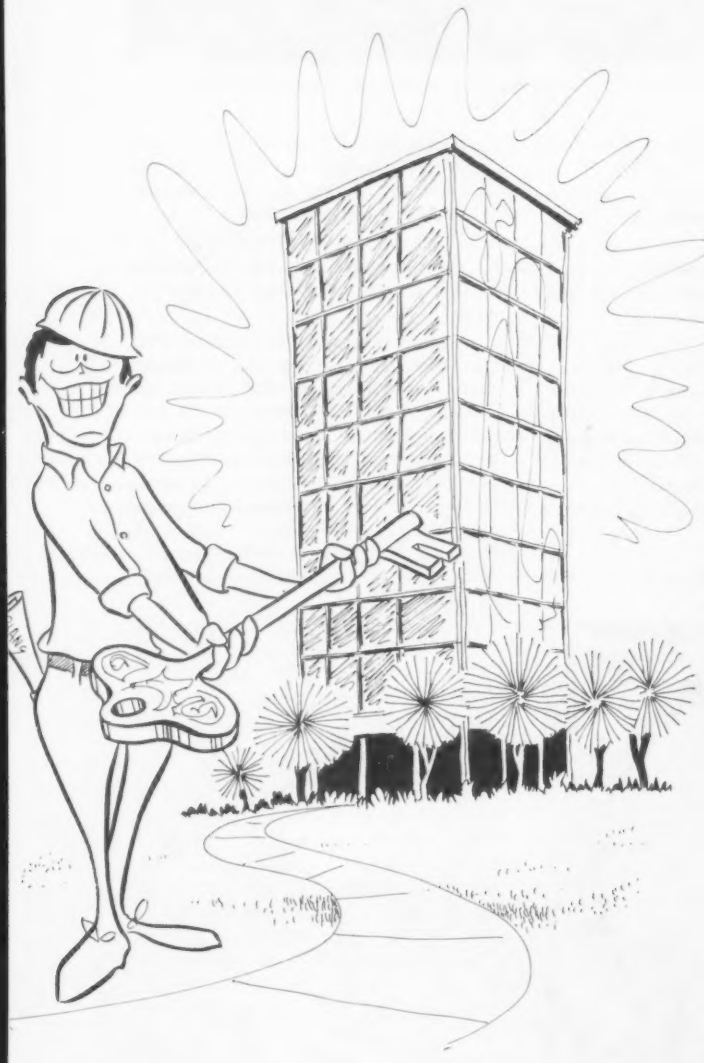
WET CHAMBER — A massive, full-access door is fitted to one end of the wet chamber. This door allows large equipment to be tested without disassembly.



Planning to prevent problems

ACQUIRING and OPERATING

By CDR. G. W. TINKER, CEC, USN
ROICC, Naval Hospital,
Camp Pendleton



• Camp Pendleton, Calif.

The acquisition process of navy Shore Facilities is a major responsibility of the Naval Facilities Engineering Command (NAVFAC). It involves master planning, concept studies, environmental impact analyses, design, and construction contract administration. Operations and maintenance is a command responsibility of the activity and its major climant.

Because of the sophistication and complexity of some of the Navy's new construction projects, the transition from NAVFAC to customer responsibility can be a traumatic event for the customer unless he has planned thoroughly to take over the new facility. NAVFAC has a responsibility to provide maximum assistance to the customer to minimize the shock of initial operation.

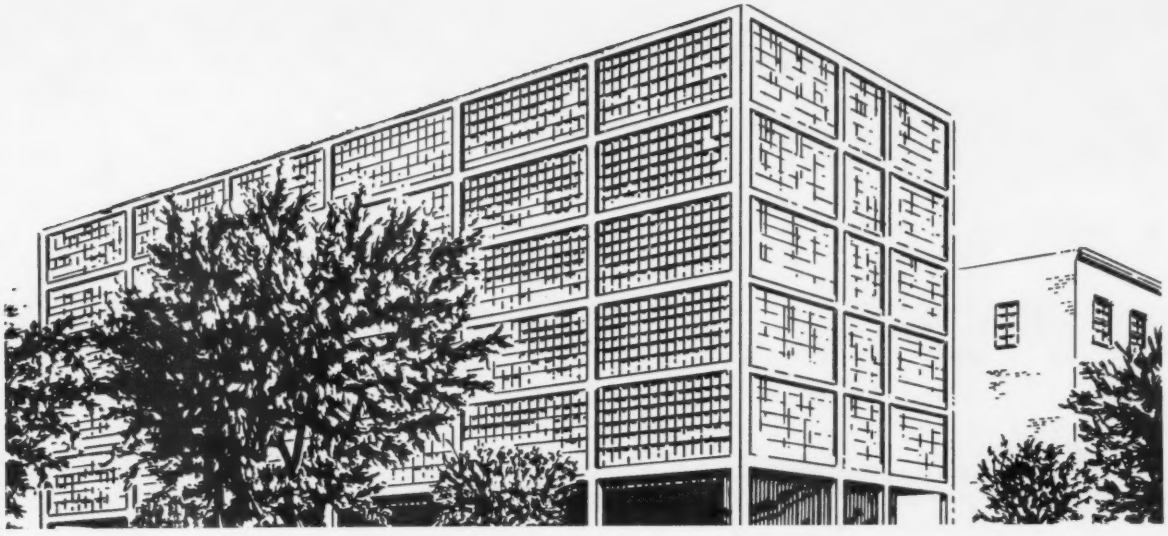
The modern hospitals the Navy is acquiring at the present time are representative of the types of change occurring in operations and maintenance functions. The recently constructed 600 bed Naval Hospital at Camp Pendleton is a 100 percent replacement for a sprawling, 1942 vintage wood frame cantonment hospital.

Every member of the staff had to be trained to operate new medical electronics equipment, automated environmental control systems, material handling systems, etc. . . . Some innovative techniques have been instituted at this facility to assist the customer breaking in the new physical plant.

The first detailed planning involved facilities maintenance. Soon after ground breaking, preliminary discussions were held between the Resident Officer in Charge of Construction and the Camp Pendelton Base Maintenance Officer. An analysis was made of the impact on each maintenance trade.

New systems were identified, such as, central air conditioning, elevators, trash and linen disposal system, central supply processing system, isolated power systems, central medical gas systems, etc. . . . Statistics gathered by the American Hospital Association on maintenance manpower requirements were studied.

Meetings with Chief Engineers from other nearby hospitals of comparable size were held and their organizations analyzed. As a result of this in-depth review, an increase in maintenance manpower requirements from 29 to 47 man-years was projected.



In these times of level funding and civilian ceiling constraints, an increase of 18 ceiling points appeared to be a challenging problem, particularly since the Marine Corps Base had to obtain these reimbursable positions to satisfy a customer requirement. Correspondence was submitted to the Chief, BUMED and the Commandant of the Marine Corps via both chains of command supporting the request for the added ceiling points and budget support.

It took three years for the formal approval to come through, but it was in time to bring the new personnel on board and provide the necessary training. Early planning was essential to timely arrival of needed personnel.

Training techniques were adapted to the new facility from proven methods used elsewhere in the Navy. The first of these was the preparation of an operations and maintenance manual for the engineering and maintenance staff. The intent of the manual was to present, in a system-by-system format, the operational philosophy of the designer, simplified schematics of whole systems and trouble-shooting techniques.

We have all seen systems operated by well-meaning maintenance personnel that violate the intended system design parameters.

Expanded trisometric drawings of each piping system were developed that can quickly identify sectional valves, flow patterns, etc. These drawings were presented showing a single piping system for the nine-story hospital on one sheet.

They follow the general format of piping schematics found in shipboard damage control manuals. They have been of great assistance in familiarizing new personnel with basic systems and valve locations. During future additions or modifications to the piping systems they will prove invaluable.

The narrative portion of the manual was laid out around the format used in the PM-3A Nuclear Power Plant Operations and Maintenance Manuals. It is not intended to replace manufacturer's preventive maintenance guidelines, but to supplement them.

Of particular importance is how various systems interact. The manual was prepared by the consulting mechanical engineer as a change order to the architect and engineering design contract. In the future this item should be included in the basic contract and be completed no later than three months before beneficial occupancy date.

One additional feature would be to package the construction contract submittals along with the manual so all information for each system would be located together.

Another training technique used on the Pendleton project was video-taping of all on-the-job training provided by manufacturers on new equipment. The concept was developed midway through the construction contract. The ROICC and medical construction liaison officer worked closely together with a video consultant to develop an in-house video capability which was included in the initial outfitting of the new hospital.

As the requirement for video systems became more refined, it became evident that the best system could be built around a portable TV production unit. A custom cart was developed including a color camera, Video cassette recorder and player, color receiving monitor, lighting kit, video cassettes (one hour recording time on each in color w/sound), custom built cart and accessories for custom built cart (headphones, microphones, video head cleaner, and carrying case for recorder).

Two hospital corpsmen were sent to the Naval Hospital Corps School, San Diego, for three months training at their video studio on equipment operation and TV programming techniques. The rolling TV studio and trained operators were on board three months before final acceptance of the new facility. The video consultant who developed the overall system was hired to assist programming the first four tapings.

The steam generating system, including two 1,000 hp boilers, was the first system filmed. Because the varying size of components, background noise and lighting problems, this proved to be the most challenging system to film.

During the next six months, a library of more than 50 video cassettes was developed on medical electronics and plant equipment and systems. Repeated viewings of the video tapes by staff personnel paid big dividends in training staff personnel at the new facility.

The library will be used continuously as new staff report to duty. A group of video cassette players and monitors on cable will be available for checkout from the education and training departments for use in the future. Editing capability is built into the video studio so the library can be updated as required.

It is recommended that commands faced with moving into new facilities with complex equipment, either develop such an in-house video capability or locate such capability nearby and put it to use. Video systems are becoming common anywhere a major training effort is underway.

The planning and training techniques used at the new Pendelton Hospital provided a smooth transition for the staff. They are adaptable to any type of complex physical plant and should be put into use on future projects.

Continuous communication during the acquisition process between NAVFAC organizational elements and the customer is essential in closing the gap between concept planning and facility operation.

The Junior Officer and Civil Service

By LT C. G. BINNING

• Port Hueneme, Ca.

Most responsibilities assigned to a new CEC officer require him to manage people. Each task carries a mandate that a mission is to be accomplished through people. People below him will actually execute the job and people above him will evaluate him by the performance of his workers. We not only work for and to benefit people, but we must work through people and this means leadership.

Why, then, is there such a dramatic lack of knowledge, usually manifesting itself in an unwarranted fear, about people? The answer should be rather obvious. The junior officer has been effectively taught to think, relate and respond in a prescribed fashion.

His "military" personnel are easy to understand, they are the *good guys.* He feels a bond of purpose and has an established channel of communication with his uniformed associates. He can guess how they will respond in a given, structured situation and further, he knows that he is a *part of the system.* He operates it and can control it. The womb of the system is very comforting to him in times of stress. Even as a novice, he can manage in this community fairly effectively and anticipate results in a predictable form. He knows most of the rules of the game and plays it well.

Why, then, does this same, rational officer approach the civilian labor force with such a jaundiced eye? Why, all too often, does he feel a total sense of helplessness or resignation? The answer in part is because he is not prepared to relate to them. He is not a part of their "system."

First, they operate in a world obviously differing from his. They work different hours, may or may not be loyal to the Navy and speak a perplexing language (pay differentials, OCMM, flextime, PD's, time cards, "use or lose," union grievances and fair labor practice)!

Second, *he* is the "outsider." The young officer is suddenly in the middle of a well established community which, unlike the military community, has a focus of interest away from the job. They are the establishment, and they have vast powers to control their environments. What hope does the new boss have? They have seen it all before and have the biggest stake in maintaining the status quo.

Finally, the civilian employee represents a way of life that all too often is reminiscent of a life style recently enjoyed by the young officer himself. He is now confronted with the dichotomy of unconsciously wishing that he too were a free agent once again but at the same time knowing that the realities of his uniform make this impossible. The new manager frequently can't relate to these situations and as a result tends to develop a defense mechanism against them.

The stage is now set for the development of the classic military-civilian confrontation, resplendent with its misunderstandings, mistrust and their insidious ally, resentment. Perhaps the most unfortunate aspect is that this initial impression may produce an indelible print on this novice manager's mind. This mental set frequently colors his actions and emotions from this day on.

What, then, can be done about this situation?

Obviously, this problem, or one similar to it, is as old as man himself. It has no single, simple solution. There are some tools which are not presently being fully employed. They boil down to *understanding people.*

If the key to the problem is the ignorance of a people oriented system, then knowledge is part of the answer. CECOS trains men to deal with people but all to frequently it does it in broad sweeping generalities. The training must become specific. The student today is going to have to relate to people operating in a well-established framework. The new manager must be taught in detail how the system works. Job description preparations, evaluations, selections, discipline and the union *must* become a way of life for him. But most of all, the training must dissolve the myths which produce such classics as: "If he is in civil service, you can't fire him" or "If he is civil service, he probably is too lazy to find a real job" or better yet, "Look how much more he gets; I work harder than he does!"

Only through concentrated, directed training (preconditioning) will the officer leave CECOS feeling that he understands the framework in which his personnel live and work. He must have developed within himself that he knows that he can influence the system. He must be able to deal with his civilian and military force from a position of power, and power is knowledge in this case.

We cannot afford to wait for him to learn these skills on the job. The price paid for this time spent at CECOS is a deterioration in experience with some reports, systems or programs. True, but these can be learned on the job if he can deal with people. CECOS is in a unique position to greatly influence the military/civil service complex.

OPINION

The new Civil Engineer Corps officer leaving CECOS today is in a poor position to manage in the Civil Service System and is being set up for a very unfortunate learning experience.

This article was composed by the author while attending the LT/LCDR refresher course at CECOS. Students were requested to express their views concerning Navy duties — and several have been selected for publication. Readers are invited to express their opinions too and should forward their comments or articles of similar content to The Editor.

TECHNICAL NOTES

METRICS:
Like it or not

The Department of Defense participated in a U.S. metric study sponsored by the Department of Commerce which resulted in a recommendation to Congress that the U.S. change to the international system of units (SI). Although Congress has not completed action on a metric conversion act, it has recognized that increased use of the metric system in the U.S. is inevitable.

Accordingly, W. P. Clements, Deputy Secretary of Defense, signed a metrication memorandum on 10 June 1975. A few policies are:

1. Reviews which take place after 31 Dec 75 shall include comments regarding the use of metric units of measurement or reasons for their non-use.

2. Technical reports, studies, and position papers issued after 31 Dec 75 will include metric units of measurement in addition to or in lieu of U.S. customary units.

3. Effective immediately, the international metric system will be considered in the procurement of all supplies and services and particularly in the design of new material.

Additional information may be obtained from: *D. K. Johnson, Naval Facilities Engineering Command, Code 10131,1 autovon 221-8182.*

Lightwater douses a fire

A gasoline tank fire burning out of control in Richmond, Virginia provided the Navy a rare opportunity to test the effects of AFFF, applied by the MB-1 Crash Fire Rescue vehicle.

The fire at the Little Oil Company tank farm in Richmond occurred June 26, 1975, and had been burning unchecked for 17 hours before Navy help arrived.

AFFF—Aqueous Film Forming Foam—commonly called "Lightwater" is a water additive which has been used effectively on controlled-type fires to date.

The Navy's MB-1 truck can discharge large quantities of AFFF and its main use is to put out aircraft fires. It has always been believed AFFF would be effective against large petroleum fires.

This fire involved an area of 40,000 square feet, three tanks totaling 2,400,000 gallons on fire, and exposure of two tanks within 36 feet containing 2,840,000 gallons of additional fuel.

This provided an exceptional challenge for personnel and equipment.

Despite a restricted water supply, the fire was brought under control in about 40 minutes. The amount of AFFF used to extinguish the fire was 1,535 gallons.

The Air Force and Army provided additional personnel and equipment.

To increase further the effectiveness during application of AFFF, the Navy is now testing the use of elevated fire streams with large gallonage capacity.

For further information, contact: *James M. Manser, Area Fire Marshal (Code 09BF)*

Sludge

The industrial waste treatment facility at the Naval Air Station, Alameda, Calif. was designed to collect and treat wastewaters from combined plating and aircraft washracks. The wastewaters are pumped to the treatment facility at a rate of 55 gallons per minute and are mixed in a surge tank prior to treatment.

The treatment process includes the addition of sulfur dioxide and sulfuric acid to reduce hexachrome to trivalent chromium, the neutralization of the acid with sodium hydroxide, and the precipitation of the chromium in hydroxide form. This specified process is not successful due to interference induced by certain chemicals in the wastewater.

In a laboratory test at the site, Dr. D. B. Chan, CEL engineer, demonstrated the use of ferrous hydroxide. This process eliminates the need for all other chemicals. Less chemical dosage is required and, in turn, produces less chemical sludge. Observers of the test were very well pleased with the results.

CEL has also recommended the use of ferric chloride as a coagulant for precipitating chromium hydroxide in the process, which worked in some cases. Then, other study indicated that ferrous sulfate should work in every case. However, disposal of the large quantity of chemical sludge (1,000 gal/day) generated from the facility is a second unexpected problem ($150/day at 15c/gal hauling away cost). The testing of the ferrous hydroxide was undertaken to solve this additional problem.

The company employed by the station for the operation of the treatment facility will run more tests with the ferrous hydroxide to cover all possible variations in characteristics of the waste streams, and to test the feasibility of recycling chemical sludge to further reduce the sludge disposal problem.

Ferrous hydroxide is not available in commercial quantities due to its inherent instability. However, it can be generated in a water environment at the application point using an electrochemical process. Faraday efficiency can be expected in a flow cell which utilizes sacrificial low-carbon steel anodes and stainless steel cathodes. Following the confirmation of test results, the development of the electrochemical process for generating the ferrous hydroxide in situ appears advisable.

For further information, contact: *Dr. D. B. Chan, Code L65, Autovon 360-4191; (805) 982-4191.*

PUBLIC TECHNICAL

Cloth hoods for spray painters

Wearing a cloth hood when spray painting has been tried at Marine Corps Air Station-Yuma. The hood protects both the head and neck and can be made out of disposable felt paper. It reduces the health hazard by reducing skin exposure to excessive paint solvent and reduces clean up time. Moreover, it was estimated that time could be reduced by about one quarter hour per man per day. The hood is not a substitute for a respirator.

Additional information may be obtained from: *R. Madero, MCAS Yuma, Arizona, Autovon 933-2329.*

Plywood replaces particle board for floor underlayment

Particle board should not be used for an underlay for vinyl asbestos tile or other floor coverings which are cemented in place. The solvent and/or the adhesive material can be absorbed into the particle board and thus a poor bond is produced. This can result in the movement and/or loosening of the tiles. If an organic solvent-type adhesive were used, it could also have had some solvent action on the resin in the particle board.

The recommended method is to use plywood underlayment. To this is bonded, with a water emulsion rubberized asphalt adhesive, a layer of 15- or 30-pound felt. The same adhesive is used to bond the vinyl asbestos tiles (1/8 inch minimum thickness) to the felt. Avoid the use of organic solvent based adhesives.

There is no maximum shelf life for one commercial brand checked — only a requirement for protection from freezing (presumably the same shelf life is obtainable from comparable products).

For parquet flooring, the adhesive recommended by the manufacturer should be used.

For further information, contact: *T. Roe, Jr., Code L52, Autovon 360-4772; (805) 982-4772.*

Cathode protection system developed

Last year a cathode protection system for fuel lines at Naval Air Station, Lemoore was installed that has provided a low maintenance, low operating cost solution to a problem which is common throughout the Navy.

What makes this system unique is that instead of the usual commercial utility or motor generator power source, this system uses a bank of solar cells 1 m high by .6 m wide which are connected to lead acid storage batteries. By using solar power, the need to install power lines and transformers or the construction of an "operations and maintenance intensive" motor generator was eliminated.

The 1 m by .6 m panel of solar cells stands 1½ m high and is tilted 45 degrees to the south to provide both optimum solar angle and low dust accumulation. The power output is 2 volts at 2 amp and when used in connection with the storage batteries, provides the necessary protective potential level.

For further information contact: *LT P. R. Antoniak, Acquisition Coordination Officer, Code 09AI, Western Division, NAVFAC, P.O. Box 727, San Bruno, Calif., 94066 Telephone Autovon 859-0111*

PUBLIC WORKS NOTES

It is said there's always a way to build a better mousetrap and this section of The Navy Civil Engineer is designed for ready exchange of better ways to perform Public Works functions. Readers who desire additional information are urged to contact the contributor directly for specific details. Contributions are urged from field installations and should be directed to John S. Biggs, PW Technical Coordinator, Code 1013, Headquarters, Naval Facilities Engineering Command, 200 Stovall Street, Alexandria, VA 22332; Autovon 221-8182 or (703) 325-8182. Coordinator ofr RDT&E subjects is Eugene H. Early, Code L03C, Civil Engineering Laboratory, Naval Construction Battalion Center, Port Hueneme, CA 93043; Autovon 360-4070 or (805) 982-4070.

Critical cracks make brittle breaks

In the early hours of a day in the 1940's, the S.S. Schenectady, lying at anchor in a sheltered mooring, suddenly and spontaneously broke amidships into two separate pieces. A crack started in a hatchway corner at the upper deck and travelled down to the keel at the velocity of five thousand feet per second.

At the moment when the fracture occurred, the computed maximum stress in the whole ship was only four tons per square inch, while the hull was designed for a working stress of ten. The S.S. Schenectady accident sparked off several multinational, multimillion dollar research programs into the reasons behind ruptures of a "spontaneous" nature in steel, and not only in ships, but also in pressure tanks, pipelines and, in general, in structural members.

There is now a consensus that the main cause of such fractures is that all metallic materials have microscopic cracks. These cracks are stable (that is, they do not grow) under a certain combination of values of the parameters defining the material, of the length of the pre-existing crack and of the level and characteristics of the loading.

Thus, some ordinary carbon steels can have cracks of up to 20 mm which will not grow when subjected to a stress of eight tons per square inch and catastrophic failure will not happen.

Above that stress, however, the microcracks will grow and, joining one with another, they will become a longer crack which might then be beyond critical length. From that moment crack growth is instantaneous (for all practical purposes).

If we now take an alloy steel for comparison, certainly it will have a higher working stress than carbon steel, but the critical length a crack or welding defect can have before it starts "instantaneous" propagation is, on the other hand, shorter than for carbon steel.

That is the "trap" that high-strength materials set for the designer and user!

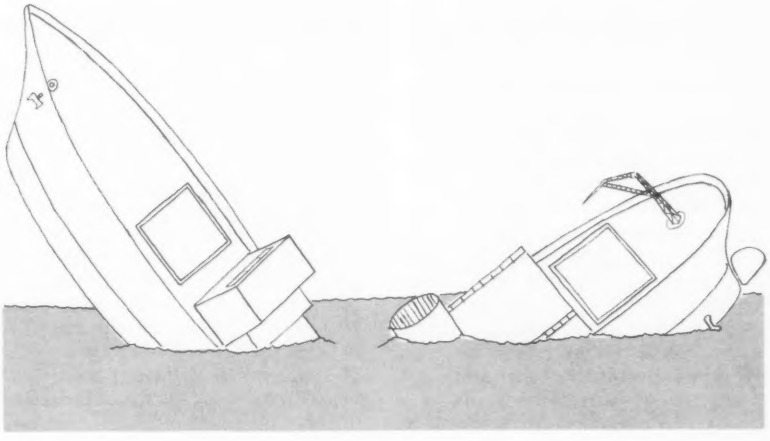
In the writer's opinion, a proper balance ought to be obtained in design between the significant parameters: critical crack length according to material and grade being used; and working stress and characteristics of the loading fluctuation; and thirdly, degree of accuracy to be specified for inspection of the material and welding process.

Failure to attain this balance might lead to one of the not infrequent, uneconomical situations found in actual designs, namely:

- Specifying a very exacting and costly inspection procedure, which will not add to safety because the grade of material and the applied loads on the structure will combine to give a large critical crack length, so that the accuracy in detecting very short cracks and minute welding defects is lost.
- Specifying a high-grade material for a piece subjected only to a moderate stress level, with the aim of reducing materials cost by reduction in dimensions. Now, high-strength materials have extremely short critical length of pre-existing cracks, to such an extent that in some cases the critical length is below the threshold of the inspection procedures specified.

If that is the case, not only will the advantage of the use of a costly material and of an expensive inspection be lost, but the piece will certainly fail in the sudden or "spontaneous" manner, in due time.

We may look forward to the moment when it will be considered appropriate to include critical crack length checks among the requirements of NAVFAC design criteria. For more information, *contact Dr. Agustin Motilla, Design Management Division, OICC NAVFAC Contracts, Madrid, Spain.*



Rules for power tools

A handy wall-chart and 40 slide presentation is available to promote safety in the use of power tools. The program presents good habits in an organized manner for the apprentice, as well as the journeyman, in a wide range of situations.

The program is supported with illustrated handout material and a "how to" program guide which provides suggestions and outline for conducting the safety presentation. The show is less than an hour long.

The professional groups that created this new program include: National Joint Apprenticeship and Training Committee for the Electrical Industry; International Brotherhood of Electrical Workers; National Electrical Contractors' Association; and the Accident Prevention Branch of the National Institute for Occupational Safety and Health.

Additional information may be obtained from: *John Leimanis Naval Facilities Engineering Command Alexandria, VA autovon 221-8182.*

Fire-rated door frames are safe and economical

Many of us may have experienced a frustrating exercise — the structure looked good when it was finally completed; the masonry work turned out well and all specified reinforcement had been provided.

Then, because of a change in mission, different people have become occupants and have generated a hazardous condition. As a result, all doorways must be fire-rated to meet safety regulations, a requirement that previously did not exist.

We know how costly this modification can be — frames in particular. We think we're smarter, now. When designing a new structure or modifying an existing structure, we specify that *all* door frames in masonry walls be fire-rated — either U.L. or F.M.; the additional $10 or so per frame is considered well worth the investment. Doors are less of a problem since non-rated doors can be salvaged and reused elsewhere.

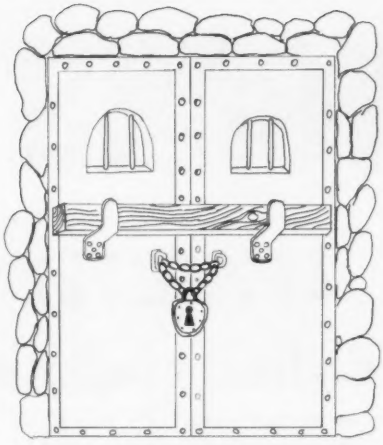
Additional information may be obtained from: *R. A. Rivers Naval Ship R&D Center, (Code 5412) Annapolis, MD, Phone Autovon 281-3451.*

Energy storage or heat pump

The Naval Facilities Engineering Command, through the Naval Underwater Systems Center (NUSC) Newport, R.I., is investigating the use of an unusual metal compound which can be used as either an energy storage device or a heat pump.

The compound is lanthium pentanickel (La Ni5) which has the unusual property of being able to store hydrogen. This in itself is not unusual (there are a number of metal hydrides); however, lanthium pentanickel can store 1.1 times the amount of hydrogen at a couple of atmospheres pressure and at a slightly elevated temperature, than is possible with liquid hydrogen at near absolute zero and many atmospheres.

By pumping hydrogen into the metal, heat is generated. When a vacuum is created, the hydrogen is drawn off and heat is absorbed. By cycling the hydrogen back and forth, an effective heat pump is possible. NUSC will build a prototype 5000 btu heat pump in FY76 to prove the economics and practicality of the approach. Initial work with the compound has produced successful results.



Security

Simple precautions and techniques—with little outlay of money—can greatly increase the security of keys and locks presently in use on Navy bases.

The first precaution before any lock is placed in service: remove all exposed identifying numbers by grinding them from the lock and all keys fitting the lock.

This recommendation comes from the Civil Engineering Laboratory's new physical security lab. Numbering of locks and keys by the manufacturer is a normal procedure. Generally, with these numbers, a person can obtain duplicate keys from any well-equipped locksmith.

Combination padlocks should be protected by scrambling the combination immediately upon opening so that numbers will not remain in view. The manufacturer's preset combination should be changed to a new, randomly selected set of numbers. Also, note persons who may observe the opening of a combination lock.

Some tips for increasing security with keys and locks already in use:

DON'T leave numbers on locks and keys.

DON'T put identifying marks on keys or locks.

DON'T leave padlocks hanging open or lying around unlocked. They can be switched for one which looks the same, but for which the would-be thief has the key.

DON'T loan your keys to anyone. They can be duplicated in minutes; numbers copied in seconds.

For further information, contact: *Ken Gray, Code L61, Autovon 360-5927; (805) 982-5927.*

Materials Priorities

DECIDING WHO GETS WHAT FOR DEFENSE

By MILLICENT MARAVICH
Supply Systems Analyst
Material Management Division,
NAVFAC HQ

• Alexandria, Va.

Imagine yourself as a commercial supplier of materials or products. Your business comes from both private industry and government. As a good businessman, you are inclined to favor those customers that bring you the greatest return on your investment. But, after all, there's no war on, so why give the military special attention?

Why should the reinforcing steel you're producing for a military structure take precedence over the same kind of reinforcing steel that may be used in an office building in the middle of Manhattan?

But what the businessman may lose sight of is, that since the military power of the United States is used as a deterrent force as well as a defensive force, it is necessary that the force be maintained in a high state of readiness. To override the results of the "maximize earnings" philosophy in industrial circles and to mobilize promptly the industrial resources of the country for national defense, there exists the Defense Materials Priority and Allocation Program.

In 1950, during the Korean War, the President was authorized by the Defense Production Act to allocate materials required for defense needs and to assign priorities to defense procurements.

The program authorized by this Act became known as the Defense Materials Priority and Allocations Program. Very simply stated, this program requires a contractor, when specifically directed, not only to accept defense contracts in preference to all others, but once the contract is accepted, his performance of the contract takes preference to all others.

Additionally, certain required raw materials may be allocated to con-

Materials Priority

(Cont. from preceding page)

tractors who are performing a defense contract. The Defense Materials Priority and Allocations Program is divided into two segments: the Defense Priorities System and the Defense Materials System.

The purpose of the Defense Materials System is to keep military production, construction and research and development programs on schedule by allocating raw materials in short supply to defense contractors and to in-house facilities. These raw materials are referred to as "controlled materials" and fall into eight categories: carbon, alloy and stainless steel, copper and copper base alloy, brass mill products, copper wire mill products, copper and copper base alloy foundry products, nickel alloys and aluminum.

NAVFAC's planned requirements for these controlled materials are computed quarterly, based on past experience and the coming quarter's construction, and submitted along with other systems commands' requirements to the Chief of Naval Material (CNM). CNM then forwards these requirements to the Assistant Secretary of Defense (Installations & Logistics) ASD (I&L). When combined with other DOD requirements, the total quantity becomes DOD's portion of the national production capability of controlled materials. The General Services Administration (GSA) in its capacity as the administrator of the Defense Production Act, determines DOD's actual portion of controlled materials and the process goes downward through ASD (I&L) and CNM until it reaches NAVFAC.

NAVFAC then becomes the holder, figuratively speaking, of allocations of controlled materials required for construction projects. The producers of these controlled materials are required to reserve a specified quantity of each month's production of the controlled materials in anticipation of use by DOD.

Assuming that a construction project requires the use of products containing controlled materials and which are either of military design and usage (Class A) or commercial items having greatest usage outside the military (Class B), the prime contractor is instructed to apply for an allotment of controlled materials necessary for him to produce these products.

Functioning with the Defense Materials System to comprise the other half of the Materials Priority and Allocations Program is the Defense Priorities System. It controls the preferential assignment of commercial/industrial resources being applied to the production of defense products to ensure timely delivery in support of national defense. Assignment of suppliers' resources is predicated on the military importance of the products or equipment he is producing.

The importance of various defense programs is maintained at the SECDEF level on the Master Urgency List. This list contains two categories of programs: those approved by the President as having the highest national priority because of key political, scientific, psychological or military objectives and those approved by the Secretary of Defense as having the highest priority because of their military essentiality and criticality. The first category bears the moniker *Brick-Bat* and the latter, *Cue-Cap*. These categories determine the priority rating assigned to a contract—either a DX or a DO.

DX-rated contracts take precedence over all DO-rated, non-rated and commercial orders. All programs in the Brick-Bat category, and hence all DX-rated contracts in support of these programs, are equal and therefore cannot take precedence over each other. Programs in the Cue-Cap category, with their DO-rated supporting contracts, are arranged in descending order of importance.

If a supplier or manufacturer's resources are not available to fill the requirements of all programs, a program's position on the Master Urgency List would determine if it received preference over another.

Sometimes a DX or DO rating is insufficient to provide timely deliveries from a supplier. Or there may be instances when a supplier won't accept a rated order. When this occurs, special assistance may be requested by completing *Commerce Department Form 138* and submitting it through appropriate channels for resolution. In the event the case is not resolved, the form must then be transmitted to the Integrated Material Support Program Branch in NAVFAC where every effort is made to resolve the problem. If a better delivery date cannot be obtained or if the order is rejected, NAVFAC forwards the case to CNM who sponsors it to higher authority.

The Joint Logistics Review Board in its examination of the logistics lessons learned during Vietnam operations concluded that because the Defense Materials Priority and Allocations Program was operational at the start of the Southeast Asia build-up, the United States was better prepared to meet its military commitments than in previous conflicts. Experience has shown, however, that the program's effectiveness is somewhat diluted because many people responsible for its functioning are unfamiliar with its provisions and unskilled in its application.

There are a few practices that can alleviate this situation. Civilian and military personnel in the NAVFAC family who are associated in any way with the Priorities and Allocation Program should acquaint themselves with the Department of the Navy Priorities and Allocation Manual (P-4830), which contains the basic guidance for priorities and allocations operations within the Navy.

OICCs and ROICCs can aid the education process of contractors and suppliers by means of NAVFAC Pamphlet P-356. This very readable document is designed to acquaint contractors with the Defense Materials System and the policies governing allotment requests. The efficient operation of the special assistance procedure depends upon prompt initiation of requests and the completeness and accuracy of the information supplied.

In the past, improperly completed and routed Form 138s have defeated the purpose to expedite contractor performance.

"to afford the luxury of having martinets . . ."

Continued from page 5

man must cope with the inevitability of changes both in his personal life circumstances and in the organization in which he works. Unless the changes taking place are recognized, understood and adjusted to, no organization can long survive." Furthermore, with regard to attitudes, "The *more highly intelligent, educated, creative, and motivated men are, the greater are their needs and expectations to be treated as persons rather than 'hands' or 'bodies.'* Men's essential need to be considered as persons worthy of respect *regardless of their work or position in society* must be recognized and honored in *day-to-day relationships.*" These observations hold as true today as ten years ago. (Italics added.)

This is a helluva long way from the arguments in favor of flogging, you've got to admit.

The naval officer fills several roles. His official, chartered place in a military system; an articulation point in a chain of command; but also in an unstructured set of human relationships, where he is simply another human being.

Both of these roles have a leadership dimension. Historically, until recent times, the second role could be, and generally was, ignored, subordinated, or neglected entirely.

Not any more. Respect from subordinates, the most vital element of leadership, must first of all be earned, both as a naval officer *and* a person.

Traditionally, authority was vested in the official role, the office, the position—in a chain of command.

Now, there is a massive cultural shift underway. It is coming to pass that authority is no longer vested in the position, but in the person—the human being—and in the values manifest in the person.

In a sense, America has lost its virginity. The events of the past decade have deflowered us savagely. We no longer believe in giants; we have noticed that the giants' clothes don't fit any better than ours do. Sometimes not nearly as well.

But many officers and petty officers are locked into a single role—the official one. Some can't get out; they don't know how, and they have no interpersonal skills. Others are afraid to venture into the risky, hazardous world of human relationships, and consequently their entire personal security must be sustained by the official protected role.

This retreat from the human world is more widely distributed among older officers and petty officers than among the younger.

The rationale for this posture is declared to be:

- This is a military organization.
- The highest value sought is success in war.
- For this, instant unquestioning obedience is necessary.
- A chain of military authority is distributed to achieve this.
- The function of leadership is to prepare troops for military success.
- Humanization of the military conflicts with military success.

This is a sound enough proposition for purely military evolutions. But it overlooks the fact that, during peacetime and even during wartime, a great part of troop time is spent on activities that are indirectly and sometimes only remotely associated with military evolutions.

During these times the opportunities for the officer to act in the person role are innumerable and may extend over long periods of time. It is here that the human dimension of leadership can be cultivated—put in the bank, so to speak, to be drawn on when needed—if one understands its values, and is not afraid, and is equipped to do it.

For those not so equipped—those who confuse superior capabilities with superiority in human terms—it's probably best not to try. Nothing so alienates men from an individual so thoroughly as an exhibition of elitist conviction which by its fundamental nature makes human associations impossible.

Such individuals do not wear well.

Admiral Zumwalt is quoted as saying: "The services used to be able to afford the luxury of having martinets. The draft would drive men in, and the martinets would drive them out. For every 100 men the Navy trained, it kept only ten."

None of the foregoing requires or depends upon socialization, or any other erosion of the official role, although those who have difficulties with role separation will find fault with the idea on that basis.

Some of us have watched and marveled at the extraordinary abilities of other officers to achieve this separation so easily, comfortably, with great and visible effect. Healthy organizations are the result.

But when command energies are extravagantly spent on preservation of authority, maintenance of status, prestige and domains, an unhealthy organization often results.

The military is not alone faced with these difficulties; identical difficulties are faced by private, profit-seeking organizations.

Conventional wisdom, convictions of infallibility, self-righteousness, get in the way of effective leadership. Command requirements, conceived in isolation and removed from the action/implementation arena, sometimes impose upon division and company grade officers activities which are carried out at the expense of the human dimensions of leadership at that level.

At best, because of the tyranny of the fitness report, it requires actions contrary to their best judgment with dubious results. At its worst, it establishes an adversary relationship between the junior officer and his men.

Many times we hear (from commanding officers), "I want my junior officers to compete. That's the only way I can separate the men from the boys," (for fitness reporting).

The reason this idea is so often represented as a "good" measure is that the C.O. (as a junior officer) was subjected to it and succeeded. Who among us will criticize a system which recognized his virtues?

"moral cripples make the best gamesmen . . ."

But like a lot of ideas we were programmed for and now take for granted, we know a lot more about competition—its cost and benefits—than we used to.

Under certain conditions competition does serve as an incentive and does contribute to the maturation process.

But under certain other conditions it brings out not the best but the worst in a man. Further, it encourages the development of strategies of succeeding at the expense of contemporaries. Those who are so inclined can, and do, compete in ways that are offensive to the moral standards of most officers.

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Backstabbing, which is a growing problem in corporation hierarchies, is not unknown in the Navy. Many of us have marveled at the success enjoyed by a few officers who employ, with consummate skill, elaborate plots, politicking, dirty tricks (invisible, except to contemporaries) to favorably impress the 'old man.'

This is the fallacy of results being the measure of an officer's fitness; too often the means employed to obtain results is left out of the equation. I have even heard C.O.s say they didn't care how the results were achieved. How absurd. There is such a thing as legitimacy of means, obviously.

Many readers, at one time or another, have been a casualty of gamesmanship devised by a contemporary. When you found out *just what had happened* what was your opinion of the other player? Unfortunately, moral cripples make the best gamesmen.

The most crucial factors of command team effectiveness are mutual respect, mutual trust and mutual support. But how intent were you upon supporting him, trusting him, respecting him—after he had won his game?

When commands establish competitive expectations and incentives without parallel criteria which cultivate the values most critical to command team/military effectiveness (mutuality of respect, trust, and support), it is destructive. Section 31 of the officer's fitness report is devoted to working relations, and contains five entries:

- Works for high morale while accomplishing mission
- Cooperates harmoniously with others
- Encourages subordinates' initiatives in accomplishing work
- Gives personal counseling and timely performance appraisal
- Encourages two-way communications

Each of these is highly subjective and lends itself to a variety of criteria. Much of what an officer does in respon e to them is not easily visible either as to means or ends. Except for the second, nothing in the fitness report is particularly sensitive to the values of collaborating with contemporaries; nothing in the report indicates the desirability of developing habits of respect, trust, support of contemporaries.

It occurs to me that two officers, one whose convictions are built upon a competitive value system, the other upon a collaborative value system, would differ greatly in their marks in Section 31.

Promising career lieutenants and lieutenant commanders have told us that their greatest difficulties are not with subordinates but with contemporaries whose competitive ethics were offensive. There *is* a moral imperative, and it can be subordinated only at the risk of undesirable outcomes.

More than one promising officer, in mid-career, has told us that he was considering leaving the Navy "because it required the sacrifice of so many important personal moral values." Willingness to compromise deeply held beliefs or values is diminishing, not only in the whole culture, but in the naval culture as well.

Problems are not new to the Navy, which may have fewer than the other services. The problems and conditions noted herein are not *generally* true as every command is different. Too often we generalize from parochial experience. In this 200th navy anniversary year the prospects for solution of navy problems are encouraging. In a speech to the Congress last year, Senator Proxmire (no less) said, "No other department of government can show as much improvement in basic capability nor claim such a dramatic increase in effectiveness. Judging by the last 15 years, the Department of Defense has faced and solved more management problems with greater success than any business in the world."

And in a study conducted by the Institute for Social Research, University of Michigan, two years ago, the military ranked *first* on a public confidence scale. All other public and private institutions ranked lower—some much lower.

Our military institutions aren't perfect, and never will be.

No thoughtful person expects them to be, but on the other hand, *first place* isn't bad.

About the Author

T. C. MURPHY
Professor Emeritus

Author James Hilton created an unforgettable academic character in his Mr. Chips, a personality so epitomizing the dedicated instructor of the English public school.

And, CECOS (the Navy School, Civil Engineer Corps Officers), has its parallel in Ted Murphy.

A Navy commissioned veteran of both WW2 and the Korean War, he joined the CECOS faculty in April 1952, and since that period has indisputably influenced thousands of students that have experienced his instruction as director and professor of engineering management at our Navy school.

His plaudits are truly worldwide. Officially, his worth is best described in the Navy Superior Civilian Service Award presented by the Chief of Navy Education and Training, Vice Admiral M. W. Cagle in 1974. The citation read in part: ". . .his beneficial impact is acknowledged by officers of the Civil Engineer Corps spanning a period of more than twenty years. His outstanding performance serves to advance the highest training objectives of the United States Naval Service."

Ted is a *student's* instructor and an *instructor's* instructor. Stimulating, provocative (sometimes cantankerous), Professor Murphy is the Unforgettable Character of the CECOS story.

And now Ted has chosen to figuratively hang up his mortar board and gown (a garb that he would truly disdain) and retire (Dec. 5, 1975) from active federal service.

However, unlike Author Hilton we won't say sadly "Goodbye, Mr. Murphy," as CECOS has granted our departing dean the lifetime rank of *Professor Emeritus* (the first so granted) and thus will continue our mutual and valued association.

L.D. LAWSON
Captain, CEC, USN
Commanding Officer
Naval School, Civil Engineer
Corps Officers (CECOS)

Naval Facilities Engineering Command
SITUATION REPORT

ADP DATA ELEMENT MANAGEMENT PROGRAM ESTABLISHED - The traditional approach to Automatic Data Processing (ADP) has yielded self-contained, single-purpose applications designed to support but one functional area of an organization. Navy Facilities System (NFS) planning and discipline have now progressed to the point where certain data is common among data systems. In consonance with this continuing advance, NAVFAC acquired a Data Base Management System (DBMS)--a software system which provides for an integrated data base. DBMS requires redefinition of all system data logic (i.e., existing data programs) and, as a prerequisite, there must be well-defined data element management. By NAVFACINST 5235.1, just released, implementing DE Management procedures have been established. (NAVFAC Code 01)

NEW STATUTORY COST LIMITS FOR BACHELOR HOUSING - Statutory square foot costs for BEQ/BOQ projects approved under the FY 1976 Authorization Bill (PL 94-107) are $35.00 and $37.00 respectively. For planning purposes proposed statutory limits for future years are as follows: FY 1977, BEQ-$42.00/BOQ-$45.00; FY 1978, BEQ-$45.00/BOQ-$48.00. (NAVFAC Code 05)

OIL SPILL CLEANUP EQUIPMENT SHORE SUPPORT FACILITIES - The NAVFAC procurement program is in its fourth year and by the end of FY76 over fifty percent of the Navy's $35 million requirement will have been delivered for field use. This significant capital investment demands that proper attention is paid to field support, maintenance and operation. During FY76 NAVFAC, through the EFDs, is emphasizing shore support for this new type of equipment and harbor operations. The EFDs are currently working with field activities in defining requirements and developing projects. This effort is resulting in many new O&MN and OPN pollution abatement facility projects, e.g., utility boat davits, or launching ramps; boom storage, deployment and retrieval facilities; equipment cleaning pods; equipment storage sheds; and large skimmer berths, among others. The overall effort will increase cleanup effectiveness and extend equipment life. (NAVFAC Code 10)

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Naval Facilities Engineering Command

SITUATION REPORT

NAVY TERMINATES CULEBRA TARGET PRACTICE - Since the signing of the Treaty of Paris of 1898, which officially concluded hostilities between the United States and the Kingdom of Spain, the United States (more particularly the Navy since 1903) has controlled various areas of land in Puerto Rico including portions of the Island of Culebra and its adjacent cays.

In 1970 and 1972 the Navy relinquished control over approximately 1,346 acres of land on Culebra. Control of this land was subsequently vested in the Commonwealth of Puerto Rico.

Consistent with the provisions of Public Law 93-166, the Navy terminated its ship-to-shore/air-to-ground target activity on September 30, 1975, and is currently negotiating with the Commonwealth for a replacement site. A license is being issued to the Commonwealth for its interim use of the approximately 1,562 acres of Culebra land remaining under the control of the Navy pending Congressional clearance of the Navy's disposal of the property and the Commonwealth's likely receipt of the property by conveyance through the United States Department of the Interior. NAVFAC Code 20

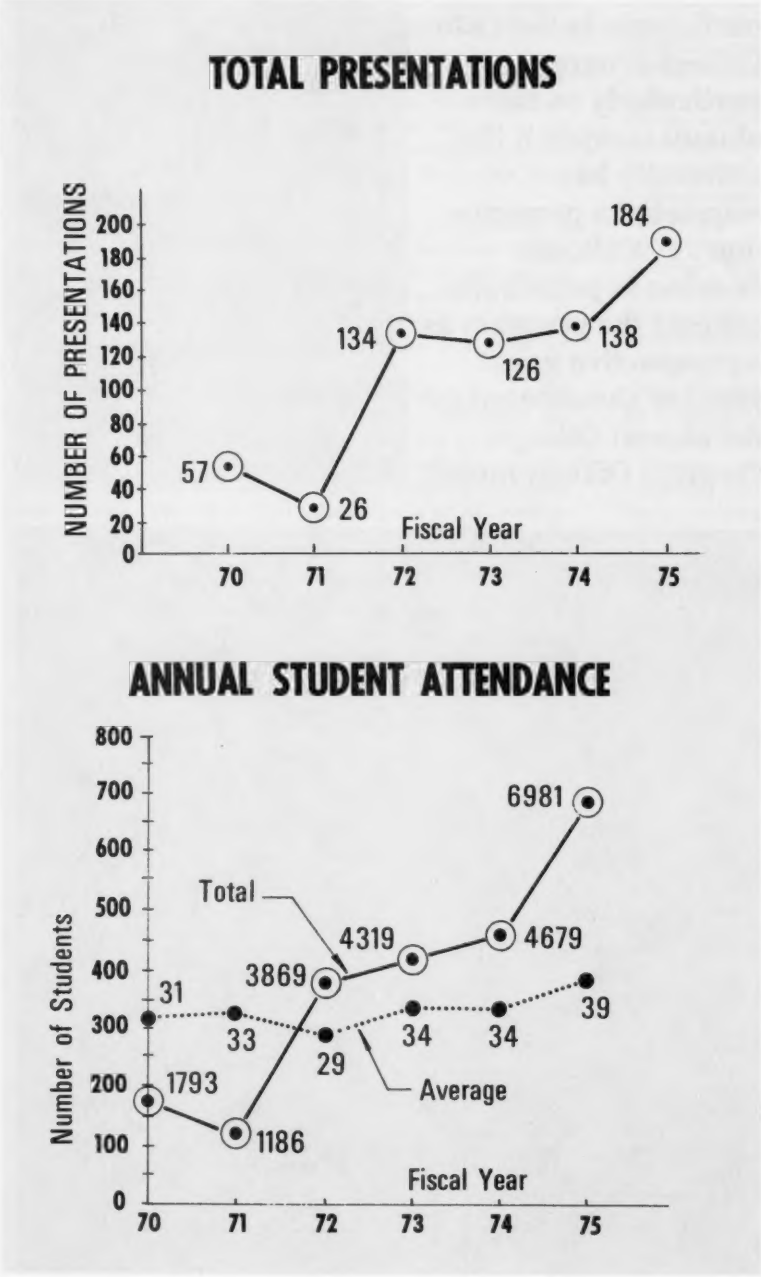
CENTERVILLE BEACH SEWER OUTFALL PROJECT COMPLETED - A NAVFAC team composed of personnel and equipment from Underwater Construction Team Two, Amphibious Construction Battalion One, CHESDIV, and WESTDIV recently completed design, procurement, and installation of an offshore sewer outfall at Centerville Beach, California. The 3,800 foot, 4 inch diameter line was constructed with flexible, steel-armored polyethylene pipe, and the installation methods were especially designed to meet the severe environmental conditions found along the Northern California coast. A unique and important feature of the installation was that laying of the offshore pipe took less than four hours. (NAVFAC Code PC-2)

UPDATE OF ADVANCED BASE FUNCTIONAL COMPONENT SYSTEM (ABFC) - Experience in Vietnam pointed out problem areas and mandated the need to update the ABFC System and replace outdated designs and components. Completion of the initial update effort was accomplished by 30 June 1975, with a reduction of the total number of components from 330 to 158. (NAVFAC Code 06)

College Program—1975

BY LT STEPHEN F. ERICKSON, CEC, USN
College Program Officer, CECOS

• Port Hueneme, Ca.



The Civil Engineer Corps College Program has now been in existence for over a decade. It is in essence a public affairs program designed to provide the exchange of technical knowledge between the Navy and college students throughout the United States and to promote the profession of engineering.

The presentations are made by Civil Engineer Corps officers to schools requesting presentations of special interest. The presence of a CEC officer on campus, also, emphasizes the engineering and professional competence of the Civil Engineer Corps and helps to acquaint engineering and architectural students with the Corps and the career opportunities it offers.

The continued success of the program is attributed to two factors. First, CEC officers have been prepared to go whenever a technical presentation has been requested by student chapters of engineering societies and into college classrooms. Secondly, and just as important, college students have been interested enough in the subject to request information of what the Navy is doing at shore facilities.

The results of the 1974/1975 school year program were the best in the history of the program. Civil Engineering Corps officers who are the experts in their respective fields traveled extensively throughout the United States and gave 184 presentations. This year's program was also the best attended with 7,000 college students participating. This also was the highest yearly average of 39 students per presentation.

The best method for determining the effectiveness of the program as a recruiting method has been to sample all new CEC officers as they come through CECOS for the basic indoctrination course. At that time each student is queried as to whether they have seen a College Program Presentation. If the new officer has heard a talk, then he or she is considered exposed. Over the past few years the tempo of the program

(Continued next page)

College Program

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has increased and so has the percent exposure.

The past few year's efforts have resulted in one third of all new CEC officers having seen as least one presentation. As the tempo of the program continues to increase, exposure is expected to increase. However, there is a time lag of several months to several years from the time that a student attends a presentation until he or she may enter the Corps. Consequently, the increased effort during FY75 may not be fully realized for several years.

Another measure of the effectiveness of the program is how the basic student first learned of the Corps. Among Navy Recruiters, printed literature, friends, relatives, and faculty an increasingly greater percentage of the students has identified the College Program as the method by which they first became familiar with the Corps. In FY75 12% of the new CEC officers identified the College Program as the important stimulus for selecting the Navy career compared to the 9% identifying the College Program in FY74.

The FY76 Program is underway. The College Program officers representing respective geographic areas are contacting the accredited engineering schools, student chapters of technical societies, and NROTC units to offer presentations to the students as desired. Officers who have specific knowledge of a selected topic may be requested to offer such presentations. Any officer who has not been contacted for a presentation and has a desire to speak to college students should contact the College Program Officer of his geographic area for possible speaking assignments.

College Program officers are now providing assistance to Navy recruiters. When a student expresses an interest in the CEC the Navy recruiter will refer him to a CEC officer to personally discuss the career opportunities of the Corps. This valuable contact provides an opportunity to give first hand information about the Corps to the student and to inject some of the enthusiasm we all share about our duties and the Navy life we lead.

Active duty CEC officers are invited to participate in the 1976 College Program . . . particularly on their alumni campus if the university has requested a presentation . . . Officers desiring to personally support the program as a prospective guest speaker should contact the closest College Program Officer noted:

Typical College Program Subjects

- Antarctic Construction
- University of Health Sciences
- Navy and Environment
- Indian Ocean Construction Site
- Underwater Construction
- Ocean Engineering
- Radioisotope Power Generator
- Seafloor Construction
- Power From Trash
- Trident Submarine Base

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PROJECT MANAGEMENT AND PLANNING

By MOREY M. FOS-HATI
Acquisition Project Management Office, WESTDIV

• San Bruno, Calif.

Conventional project network analysis, such as PERT, CPM and other methods have been used during construction of many naval facilities. A new technique to manage and monitor major projects has been initiated at WESTDIV. Project Management and Planning (PROMAP) was developed by the University of California, Los Angeles, as a "second generation" PERT and covers project planning, scheduling, resource use and control.

It is being implemented in the total planning and management of the design and construction of the Naval Regional Medical Center, Bremerton, Washington. In addition to the development of networks for design and construction of the new facility, "user planning networks" have also been incorporated.

These are networks for timely ordering and delivery of equipment, development of policy and procedures manuals, a training program for hospital staff, equipment and patient transfer plans, and related activities. These networks will not only smooth transition from the existing facility to the new one, but assure a well trained hospital staff to operate the facility once it is completed and in operation.

PROMAP differs from conventional network analysis techniques such as PERT and CPM in that PROMAP can account fully for the impact of uncertainty and performance variability upon project time and cost performance. For example, there may be some likelihood an approval will not be granted until a second or third submission; a set of drawings may be returned for corrections or changes; or a system may fail to pass test and checkout procedures.

All these can affect project time and cost performance significantly. However, if a project plan is to be effective, such uncertainties must be considered early in planning.

PROMAP allows inclusion of such uncertainties in the project plan and can be used more effectively for project *risk analysis.*

PROMAP Features

Network diagramming: The foundation of the PROMAP approach is the project plan (activity network) which provides a diagrammed display of all project activities from early planning stage through occupancy and operation of the facility. Activities are arranged in proper performance sequence depicting all necessary steps to attain project goals. The network shows interrelations and interdependencies between the activities.

One of management's more difficult tasks is establishment of clear-cut responsibilities for individual activities. The "responsibility" for each activity is assigned as the network is developed. Agencies with such responsibility may include EFD, NAVFAC, A/E, Construction Contractor, Major Claimant or Station.

Further, these responsibilities may be identified on the project plan by symbolic codes, coloring, stratifications of the network activity fields, or other means. This will assure efficient communication at all levels.

Input time estimates: Conventional techniques use a single value which may be either optimistically or pessimistically biased, while PROMAP input involves a range of values from the smallest to the largest probable. This bracketing of activity durations provides a far better in-depth estimate, hopefully devoid of an estimator's personal bias.

Network analysis: In PROMAP, the proper plan is computer simulated as many as several hundred times, each run representing a full project realization from start to end. During each project run, activity durations are sampled randomly from input distributions of duration times for each activity. The result is a range of project completion times and schedules covering all possible combinations of individual activity time performance.

The project manager thus has a data presentation which will allow his selection of a completion data compatible with an acceptable level of risk. Capacity for risk-taking differs among individuals and projects.

Hence, each manager on each project has his own acceptable level of risk, dependent perhaps on size of investment, interaction with other projects, urgency of delivery, availability of budget funds, etc. The ability of the project manager to select a project schedule to fit the degree of acceptable risk is one of the unique features of the probabilistic network analysis technique.

Activity "criticality": Conventional network analysis techniques identify a "critical path" representing the longest time path through a network. The critical path then becomes the focal point for project management.

However, when the uncertainty and activity performance variability characteristic of most projects are accounted for, there can actually be a number of different network paths which have some probability of becoming critical during the course of the project.

PROMAP avoids the conventional technique's reference to a specific critical path and, for the sake of more precise project monitoring and control, refers to "activity criticality" which is defined as the probability of the path on which an individual activity is lying becoming critical during the course of the project.

Risk analysis: Where there is uncertainty, there is risk. Management has long known this, but has not had the means of determining how much risk it faces and how to limit it. Initial computer analysis of a project plan will clearly indicate the degree to which the plan meets management objectives.

For instance, suppose management's target is to complete the project with 30 workdays, but the probability of realizing a 30-day completion is 35 percent. Accordingly, there is a 65 percent probability the 30-day target date will be exceeded.

Management may find such a risk level unacceptable and direct replanning or a resource reallocation effort designed to produce a 30-day completion probability of say, 90 percent. On the other hand, management may decide to accept the completion date with an acceptable risk level of 10 percent.

How PROMAP Works.

The process of building the project plan necessitates identifying all key activities and events, as well as sequencing and relating them. PROMAP thus assures detailed planning will take place, and that it is orderly, thorough and logical. Also, use of the graphical model (network) aids communication and common understanding.

PROMAP application to the Naval Regional Medical Center, Bremerton, involves a series of networks from initial planning through actual facility start-up.

ADVICE OF COUNSEL

BY WILLIAM H. SPECK

"A legal system is a coercive order of public rules addressed to rational persons for the purpose of regulating their conduct and providing the framework for social cooperation."—John Rawls, **A Theory of Justice** *(1971), p. 235*

Formal advertising is rigidly structured procurement: solicitations upon definitive plans and specifications, strict rules as to timely responsive bids, and award to the lowest responsible bidder exactly as bid. In theory, negotiation avoids this rigid structuralization and permits flexibility in a limited number of special circumstances.

The theory is based on statutes that limit negotiation to defined exceptions, which often must be found and determined by the heads of departments. And the mere fact that the procurement can reasonably be found to lie within an exception does not justify negotiation if formal advertising is in fact feasible.

Procurement practice does not conform to the theory: most procurement in both dollar volume and number of awards is negotiated. Even for the Naval Facilities Engineering Command, buying in the construction field where formal advertising is predominant, much procurement is negotiated. Architect-engineering services, small purchases, Turnkey housing, overseas work, small business set-asides, cost contracting, and many others are negotiated with greater or lesser deviations from formal advertising procedures. The Commission on Government Procurement recommended status for competitive negotiation as an alternative to formal advertising.

With greater use of negotiation and relaxation of restrictions on use, have come rules as to the conduct of negotiations that limit its flexibility. Prices cost and pricing data, and audits must be obtained as part of the proposal evaluation process, even though price can play little role in selection and award (as in research and cost contracts).

Proposals must be received and evaluated, a competitive range must be established, and discussions must be held for all within the range. Any changes in requirements or any clarifications in proposals must afford an opportunity for proposers in the range to submit "best and final offers."

But discussions must not lead to "technical transfusion" or "leveling" (proposers subtly learning of their own good and bad features in comparison with others from Government comments) or "auctions" (proposers learning of others' prices). Proposers may request to be "debriefed" as to why another succeeded or they failed. Overall, negotiations must be conducted to assure fair and equal treatment to all proposers. Proposers more and more often go to the Comptroller General or the courts to contest awards to competitors.

Thus negotiation may create problems, and Contracting Officers long again for simply advertising their needs and awarding on bids as submitted to the usually easily determined low bidder.

FOR THE RECORD

IT'S NEVER TOO LATE TO EXPIATE: Some time ago, in fact in the Spring 1974 edition of *The Navy Civil Engineer,* an article titled "Monuments at CBC Davisville" contained a short statement that incorrectly referred to the Seabee command structure during the Normandy invasion of WW2. Now, for the record the correct and (we trust) complete command chain for the Normandy Seabees is published for clarification:

On April 1, 1944, the 25th Naval Construction Regiment was formed with the principal function of participating directly in "far shore" (the Normandy invasion) operations.

Captain C. R. Coryell, CEC, USN, was named Officer in Charge of the 25th Naval Construction Regiment and was charged with the planning, training, and execution of all projects in which the Seabees would be involved in "far shore" activities. Elements of the new regiment designated for such operations were the 28th, 81st, 108th, 111th and 146th NCBs and the 1006th Detachment (later organized as an NCB).

Seabee operations at *Omaha Beach* were commanded by *Commander D. C. Jardine, CEC, USN,* (later Rear Admiral) Officer in Charge of the 111th NCB and those at *Utah Beach* by *Commander W. P. Greenawalt, CEC, USN,* Officer in Charge of the 81st NCB. The POL support effort was commanded by *Commander E. H. Gessner, CEC, USNR,* Officer in Charge of the 146th NCB; the *Mulberry* harbor placement by *Commander E. T. Collier, CEC, USNR,* Officer in Charge of the 108th NCB; and the *Drew* port reconstruction effort by *Lieutenant Commander J. H. Kopp, CEC, USNR,* Officer in Charge of the 28th NCB.

Sea(bee) Stories

The Half-Shot Doctor

R&R — rest and recreation. That's what overseas military families look forward to, especially when they've been cooped up on a rock in the Pacific for over a year.

And that was the case for a Navy doctor (LCDR, MC, USN) and family as they prepared for a ten-day cruise aboard a vessel from Guam to the Philippines and return. For the Doctor, R&R would mean really rest and *relaxation* — free from a daily grind of a pediatrics clinic plus in obstetrics duty every fifth day.

On the morning of the sailing date, the passengers assembled in a dockside warehouse where passports and visas were examined for validity and their baggage was tagged and accepted for delivery. The last activity for each passenger before boarding was to pass a final medical inspection.

Mrs. Navy Doctor and her children, with passport and immunization cards, passed quickly through the medical team. They were found to be free from visible symptoms of contagious diseases, their immunization cards were up to date, and the medical officer-in-charge stamped and initialed their boarding passes.

The doctor, following his flock, also had a valid passport and did not apparently have a contagious disease.

But the medical officer refused to sign his boarding pass.

The doctor did not go to the Philippines . . . *his immunizations had expired and had not been updated.*

"I take care of nearly everyone on this island," he wailed to the medical inspectors, "but no one takes care of me!" **—By Billye Newlee.**

BY RICHARD T. HIBBERT
Staff Architect, Family Housing
NAVFAC HQ

Those much cussed and discussed

MOBILE HOMES

• Alexandria, Va.

Over 15,000 Navy and Marine Corps families have chosen mobile homes as an acceptable form of housing.

So long as mobile homes are acceptable options to these service families, they represent a sizable reduction in the Navy's programmable requirement for housing. At today's prices, this could represent a cost avoidance to the taxpayer of over a third of a billion dollars.

About one family in seven has their mobile home in a park provided by the military service. Most Navy and Marine Corps parks are less costly, provide greater security than civilian parks and do not require a nonrefundable entry fee.

Yet, this has created an anomaly in that the programming and construction of Navy mobile parks is dropping to zero.

Why is the demand for military mobile home parks not deafening? There are several reasons:

RELOCATING IS RISKY

Generally, there is a waiting list at the activity the member is reporting to. If there is "no vacancy," the sailor or marine must find temporary accommodations for his mobile home. Once situated, he is reluctant to move.

"NO VACANCY"

Acceptable temporary commercial parks are not easily found. Most commercial parks are concerned with selling new mobile homes, creating equity growth and resales, and keeping out transient units.

In fact, a common practice in the commercial mobile home business is to buy and sell units on-site when occupants want to relocate. Most mobile homes do not move — except for those service personnel living in military parks, who *must* move their unit when transferred.

If temporary or short-term accommodations can be found, they are usually marginal and far from military activities.

MOVING IS EXPENSIVE

Generally, allowances for movement at government expense on PCS orders cover about 85% to 90% of the cost. Movement of a unit also shortens the life and lowers the value of a mobile home.

ACCEPTABILITY IS CLOUDY

The rationale is often given by base commanders, that because of the unattractive nature of mobile home parks, they are relegated to the back corners. These back corners generally mean longer utility runs, longer improved access roads, more difficult site preparation and other extra costs which create the need to "bobtail" the project by cutting landscaping, underground wiring and similar amenities from the project.

Thus, a vicious circle is formed: because they are unsightly they should be located in boondocks. Because they are in the boondocks they must be constructed unsightly.

There would appear to be many solutions *if* there were clear-cut support of a mobile home park program. Policy has been to provide funding support where the requirement exists, but not to encourage trailer ownership.

It is the writer's opinion that the present policy of not encouraging mobile home ownership is questionable. It is strongly felt present constraints and standards actually discourage ownership and that a neutral position is possible and in the best interest of the government.

Possible changes are as follows:

Acceptance of reasonable vacancy levels.

Present programming criteria allow construction of 90% of the deficit. But, programming for trailers demands reasonable assurance that if a service member commits shipment of his mobile home, including all of his household goods to a new destination, that he can expect to be accommodated.

Command support for sites.

Greater priority in site selection could generally lessen development costs, and pleasant surroundings would be available without the expense of screening-off the parks. Simply making use of the same selection criteria applied to other housing would relieve many problems.

Higher appearance standards.

Many things can be done by mobile home owners and the Navy to improve the appearance of mobile home parks.

Development standards are being revised to include provision of auxiliary storage buildings and combination parking-patio areas. Layouts are being simplified and made more uniform.

Mobile home owners can also help by skirting units and maintaining units and yards.

During the last three years, about 800 new spaces have been added to our Navy and Marine Corps bases, at an average cost of $4100 per space.

The mobile home park user pays back the government's investment in monthly rental charges based on a 15-year amortization schedule. In addition to paying utilities, he pays his own maintenance and repair costs and looks to himself when he has complaints about the decor or furnishings.

However, this people program with high payback, minimum investment and low visibility is about to roll to a halt.

Headquarters can do some good by pressuring for adequate funding and development standards, but the need for greater acceptance and increased support for this program must come from the activity level.

Our problem is generally one of overcoming negative attitudes and images. Many opportunities for mobile home families warrants Navy involvement.

"Thus a vicious circle is formed: because they are unsightly, they should be in the boondocks. Because they are in the boondocks, they must be...unsightly."

SPEAKING FROM TOPSIDE:

JOHN R. FISHER
Rear Admiral, CEC, USN
Commander, Pacific Division, NAVFAC
and
Commander, Construction Battalions, Pacific

Most men and women undertaking a professional career place several requirements on what they are looking for within their career field and within the life style that surrounds their profession.

Just as all people are different, the list of requirements or goals that each individual would compile would vary from individual to individual.

Requirements with respect to the career itself would probably include:

Are the jobs associated with the career interesting for a sustained period of time?

Are the jobs demanding of my initial talents and my hoped for developing talents?

Does the career pattern permit furthering of my education?

Do the jobs entail significant responsibility?

Can you observe the results of your endeavors?

Does the work entail a sense of satisfaction?

Does the work avoid humdrum routine and contain periods of adventure and excitement?, and

Are the total pay and benefits appropriate for my efforts and talent?

Requirements concerning the life style that surrounds a chosen professional career might well include such items as:

Does the career provide opportunities for living in interesting places and situations?

Do work conditions normally permit you to live in comfortable housing with pleasant living conditions for yourself and your family? And, are opportunities normally available for good social and community activities?

Knowing these frequent requirements for a career and for a desired life style, how then does a career in the Civil Engineer Coprs stack up against other career and life style patterns?

Looking back at what I and my other CEC friends have experienced—and looking ahead at probable future developments in the CEC—I see a typical CEC Ensign or LTJG in charge of a detail of about 50 Seabees at places like Japan or Scotland building fleet support facilities and responsible for the health and welfare of each and every man and his family.

This young officer is often far removed from home base and more experienced engineering and logistical help. In addition, he must review the plans, revise them as required, insure the materials are on hand on time, and insure that the facility—such as an air navigational facility—is completed on time to meet fleet requirements.

Or, this ENS/JG might be one of our new women civil engineers or architects and be assigned as an assistant resident officer in charge of construction (AROICC) with several million dollars worth of contract construction of complex electronic facilities to manage.

If he (or she) was in the public works area he could well be an ACE (activity civil engineer) or SCE (staff civil engineer)- the expert for the commanding officer on master planning, maintenance budget, transportation allowance, energy conservation, pollution abatement, etc., — and the diplomat/ proponent at shop scheduling meetings — articulate and with enough finesse and aggressiveness to insure "his" jobs receive their proper priority in the overall PWC operation.

Part of the fun is developing a project and using your newfound engineering and "politicking" skills to get it accomplished—and looking back and saying "That was my project- those men at that submarine base now have a decent chow hall — and, hopefully, my work will help in retaining some of those badly needed nuclear trained submariners in the Navy."

Meanwhile, many of the ENS/JGs will have married and established their first home at our large Seabee support base at Port Hueneme, California — or a communication station in Greece — or one of the many Navy housing units in Hawaii. Friendships established at these early duty stations while everyone is in the learning cycle — both within the Navy community and/or with your civilian neighbors — often turn out to be the most longlasting.

While busy "learning by doing" as a JG/ENS, most officers look ahead all the time to see what their next senior officers are doing — and as promotion to LT or LCDR takes place, new and more responsible jobs open up. He also looks across town to see what positions his college classmates have achieved and he frequently finds they are still at the rear of the drafting room.

Instead of just leading a detail of Seabees, the LT/LCDR now leads a whole company or is the operations officer of a multi-million dollar development of a vital national base such as Diego Garcia — or erecting scientific facilities at the South Pole — or developing new underwater construction techniques.

In contract construction, he often finds that he now heads a whole resident officer in charge of construction (ROICC) office (with several assistants reporting to him) and administering all the construction contracts for an entire naval complex such as Subic Bay, designing and building housing, aircraft and pier facilities, barracks and ship repair shops.

In public works, a LT/LCDR can find himself in everything from being the assistant public works officer at the Indian Head Naval Ordnance Station and worrying about such things as the state of the plumbing in the C.O.'s house to critical designs for manufacturing facilities for new and exotic propellants — or being the operations officers of a large

"...fun is developing a project and using your engineering and 'politicking' skills..."

public works center (PWC) and managing the day-to-day work of 2000-3000 employees for top effectiveness.

As your professional responsibilities broaden—so does your life style — those overseas learn much about their overseas friends — whether it be in an English pub or a Japanese inn, and your children learn much about many races and nationalities (does anyone ever recall seeing a shy Navy junior?).

On the base in the continental United States the happy hours on Friday night at the bachelor officers quarters get livelier as the sea stories get better — and your civilian church and community responsibilities also broaden as you find the Boy Scouts looking for a new leader, the church for a new man to worry about buildings and grounds, and the service clubs for a new program chairman who can arrange for those good and interesting Navy speakers.

And about this stage in a CEC career additional educational opportunity is often in the wind, with time out for post graduate studies in civil engineering, for example, at Rensselaer Polytechnic Institute in snowy upstate New York — or construction management at the University of Florida or Georgia Tech — or petroleum engineering (and football watching) at some of our great Southwestern universities specializing in this field — or ocean engineering at MIT — or at one of many other top flight engineering schools.

And we always need financial and managerial expertise so some will go to George Washington U or the Naval Postgraduate School at Monterey. And on the military side, some will be trained in joint and unified operations — and getting to know our sister services at the Armed Forces Staff College in Norfolk. This timeout from normal operations and exposure to academic life and studies serves as a tremendous "battery charger" and motivator for the days ahead in a CEC career.

Entering the senior officer ranks as a commander opens up new horizons. Many can look forward during this period to duty as a division director in Headquarters of the Naval Facilities Engineering Command setting policies and/or criteria for the entire NAVFAC organization in your area of cognizance—and learning how to get things done in Washington and at HQ so that when you come back as a captain you'll know who's "button to push" to make things happen.

Some commanders will have duty on other major staffs or commands where their primary responsibility really boils down to translating a fleet or command requirement into facilities projects and guiding these projects through all of the military, and congressional channels to insure that the facilities are ready when needed.

At the Engineering Field Division level, commanders head up the overall design and construction responsibilities for vast geographical area — or guide master planning for activities or whole regions which literally set the course for facility development for years to come.

As a Seabee, a commander will be a battalion commanding officer which, in my opinion, is today's most demanding job for a CEC commander — the responsibilities of moving some 600 Seabees thousands of miles, carrying out the construction mission, maintaining morale, and watching over families at homeport, are indeed awesome.

In public works, a Commander can be the public works officer of a major air station such as Miramar, or the executive officer of a large PWC such as Norfolk where all his expertise in facilities engineering, management, and financial administration will be put to the severest test.

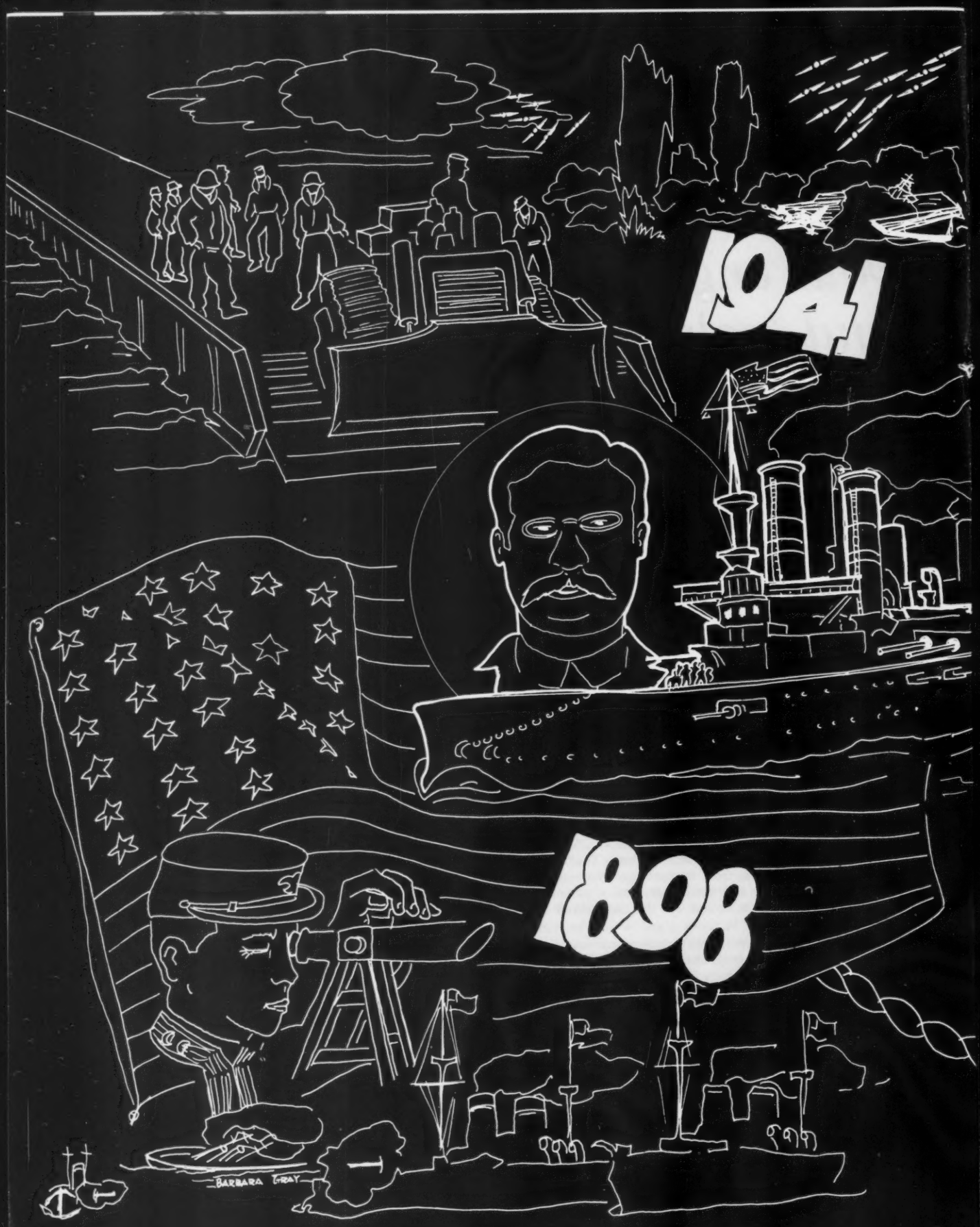
Those who are successful in advancing to the captain or rear admiral positions of highest leadership in the Civil Engineer Corps have their greatest opportunities to exercise their experiences and skills in managing the facilities needed to support our Navy's overall mission.

From the post of officer-in-charge-of-construction of a Far Eastern area to of over a half billion dollar TRIDENT submarine facility — to CO of a public works center or a Seabee center — to deputy or assistant commander of NAVFAC — to commander of a Seabee regiment constructing an "instant" tent city for 50,000 refugees — to other high military staff posts — to EFD commanding officers — to the flag positions the picture is the same fast tempo, major decision requirements affecting thousands of people and millions of dollars, flexible procedures to meet new requirements — but most of all the satisfaction of leading and watching a staff of true professionals doing what they've been trained to do and doing it in a superb manner.

And the life style surrounding these senior positions is nearly impossible to duplicate in other fields — comfortable living for self and family, prestige position in engineering circles and communities, and recognized leader in your specialty. The sea stories at the CEC get togethers get better as Vietnam — the "ice" — the Washington scene get discussed, re-discussed, and cussed.

The sense of knowing you have made major contributions to your Navy and your country grow stronger; as does the knowledge that as your active duty comes to a close you can embark on a second career with the expertise to still make major contributions to society.

I ask each of you to look again at your own professional career and life style goals such as I discussed in the beginning of this article. Also look again at your past CEC experience and what you foresee for your future in the CEC. After doing this, I think that most of you will agree with me that a career in our Civil Engineer Corps in the U.S. Navy is second to none.



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